



United States
Department of
Agriculture



NRCS

Natural
Resources
Conservation
Service

In cooperation with Iowa
Agriculture and Home
Economics Experiment
Station and Cooperative
Extension Service, Iowa
State University; and
Division of Soil
Conservation, Iowa
Department of Agriculture
and Land Stewardship

Soil Survey of Iowa County, Iowa

Part I



Iowa Department of
Agriculture and
Land Stewardship

IOWA STATE UNIVERSITY

Iowa Agriculture and Home Economics
Experiment Station

IOWA STATE UNIVERSITY

University Extension



How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

On the **general soil map**, the survey area is divided into groups of soils called associations. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the soil associations on the color-coded map legend, and then refer to the section **General Soil Map Units** in Part I for a general description of the soils in your area.

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets** in Part III. Note the number of the map sheet, and turn to that sheet. Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. The **Contents** in Part I lists the map units and shows the page where each map unit is described.

The **Contents** in Part II shows which table has information on a specific land use or soil property for each detailed soil map unit. Also, see the **Contents** in Part I and Part II for other sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2004. Soil names and descriptions were approved in 2005. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. The most current official data are available through the NRCS Web Soil Survey (<http://soils.usda.gov>).

This survey was made cooperatively by the Natural Resources Conservation Service; the Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University; and the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship. The survey is part of the technical assistance furnished to the Iowa County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Cover: A typical rural landscape in Iowa County.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.

Contents

How To Use This Soil Survey	i
Foreword	ix
How This Survey Was Made	1
General Nature of the Survey Area	3
History	3
Industry	3
Transportation Facilities	3
Recreation	4
Agriculture	5
Physiography	5
Drainage	6
Climate	7
Table 1.—Temperature and Precipitation	8
Table 2.—Freeze Dates in Spring and Fall	9
Table 3.—Growing Season	9
General Soil Map Units	11
1—Otley-Mahaska-Shelby Association	11
2—Colo-Nevin-Nodaway Association	13
3—Tama-Downs Association	14
4—Ladoga-Clinton-Lindley Association	15
5—Fayette-Downs Association	16
6—Dinsdale-Kenyon-Bassett Association	17
Detailed Soil Map Units	19
5B—Ackmore-Colo complex, 2 to 5 percent slopes	20
7—Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded	21
7B—Wiota silty clay loam, 2 to 5 percent slopes, rarely flooded	21
8B—Judson silty clay loam, 2 to 5 percent slopes	21
24C2—Shelby loam, 5 to 9 percent slopes, moderately eroded	22
24D2—Shelby loam, 9 to 14 percent slopes, moderately eroded	22
24D3—Shelby clay loam, 9 to 14 percent slopes, severely eroded	23
24E2—Shelby loam, 14 to 18 percent slopes, moderately eroded	23
24E3—Shelby clay loam, 14 to 18 percent slopes, severely eroded	24
41—Sparta loamy fine sand, 0 to 2 percent slopes	24
41B—Sparta loamy fine sand, 2 to 5 percent slopes	25
41C—Sparta loamy fine sand, 5 to 9 percent slopes	25
41D—Sparta loamy fine sand, 9 to 14 percent slopes	25
43—Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded	26
51—Vesser silt loam, 0 to 2 percent slopes, occasionally flooded	26
54—Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	27
54+—Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	27
63C—Chelsea loamy fine sand, 2 to 9 percent slopes	28
63E—Chelsea loamy fine sand, 9 to 18 percent slopes	28
63G—Chelsea loamy fine sand, 18 to 40 percent slopes	28
65D2—Lindley loam, 9 to 14 percent slopes, moderately eroded	29
65D3—Lindley clay loam, 9 to 14 percent slopes, severely eroded	29

65E2—Lindley loam, 14 to 18 percent slopes, moderately eroded	30
65E3—Lindley clay loam, 14 to 18 percent slopes, severely eroded	30
65F—Lindley loam, 18 to 25 percent slopes	31
65F2—Lindley loam, 18 to 25 percent slopes, moderately eroded	31
65F3—Lindley clay loam, 18 to 25 percent slopes, severely eroded	32
65G—Lindley loam, 25 to 40 percent slopes	32
75—Givin silt loam, 0 to 2 percent slopes	32
76B—Ladoga silt loam, 2 to 5 percent slopes	33
76C—Ladoga silt loam, 5 to 9 percent slopes	33
76C2—Ladoga silt loam, 5 to 9 percent slopes, moderately eroded	34
76D—Ladoga silt loam, 9 to 14 percent slopes	34
76D2—Ladoga silt loam, 9 to 14 percent slopes, moderately eroded	35
76D3—Ladoga silty clay loam, 9 to 14 percent slopes, severely eroded	36
76E2—Ladoga silt loam, 14 to 18 percent slopes, moderately eroded	36
76E3—Ladoga silty clay loam, 14 to 18 percent slopes, severely eroded	37
80B—Clinton silt loam, 2 to 5 percent slopes	37
80C—Clinton silt loam, 5 to 9 percent slopes	38
80C2—Clinton silty clay loam, 5 to 9 percent slopes, moderately eroded	38
80D—Clinton silt loam, 9 to 14 percent slopes	39
80D2—Clinton silty clay loam, 9 to 14 percent slopes, moderately eroded	39
80D3—Clinton silty clay loam, 9 to 14 percent slopes, severely eroded	40
80E2—Clinton silty clay loam, 14 to 18 percent slopes, moderately eroded	40
80E3—Clinton silty clay loam, 14 to 18 percent slopes, severely eroded	41
80F2—Clinton silty clay loam, 18 to 25 percent slopes, moderately eroded	41
83B—Kenyon loam, 2 to 5 percent slopes	42
83C—Kenyon loam, 5 to 9 percent slopes	42
83C2—Kenyon loam, 5 to 9 percent slopes, moderately eroded	43
83D2—Kenyon loam, 9 to 14 percent slopes, moderately eroded	43
88—Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded	44
93D2—Shelby-Adair complex, 9 to 14 percent slopes, moderately eroded	44
93D3—Shelby-Adair complex, 9 to 14 percent slopes, severely eroded	45
93E2—Shelby-Adair complex, 14 to 18 percent slopes, moderately eroded	46
119—Muscatine silty clay loam, 0 to 2 percent slopes	46
120B—Tama silty clay loam, 2 to 5 percent slopes	47
120C—Tama silty clay loam, 5 to 9 percent slopes	47
120C2—Tama silty clay loam, 5 to 9 percent slopes, moderately eroded	48
120D2—Tama silty clay loam, 9 to 14 percent slopes, moderately eroded	48
120D3—Tama silty clay loam, 9 to 14 percent slopes, severely eroded	49
120E2—Tama silty clay loam, 14 to 18 percent slopes, moderately eroded	49
122—Sperry silt loam, 0 to 1 percent slopes, depressional	50
133—Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	50
133+—Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	51
162B—Downs silt loam, 2 to 5 percent slopes	52
162C—Downs silt loam, 5 to 9 percent slopes	52
162C2—Downs silt loam, 5 to 9 percent slopes, moderately eroded	52
162D2—Downs silt loam, 9 to 14 percent slopes, moderately eroded	53
162D3—Downs silty clay loam, 9 to 14 percent slopes, severely eroded	53
162E2—Downs silt loam, 14 to 18 percent slopes, moderately eroded	54
162E3—Downs silty clay loam, 14 to 18 percent slopes, severely eroded	54
163B—Fayette silt loam, 2 to 5 percent slopes	55
163C—Fayette silt loam, 5 to 9 percent slopes	55
163C2—Fayette silt loam, 5 to 9 percent slopes, moderately eroded	56
163D—Fayette silt loam, 9 to 14 percent slopes	56
163D2—Fayette silt loam, 9 to 14 percent slopes, moderately eroded	57

163D3—Fayette silty clay loam, 9 to 14 percent slopes, severely eroded	57
163E—Fayette silt loam, 14 to 18 percent slopes	58
163E2—Fayette silt loam, 14 to 18 percent slopes, moderately eroded	58
163E3—Fayette silty clay loam, 14 to 18 percent slopes, severely eroded	59
163F—Fayette silt loam, 18 to 25 percent slopes	60
163F2—Fayette silt loam, 18 to 25 percent slopes, moderately eroded	60
163F3—Fayette silty clay loam, 18 to 25 percent slopes, severely eroded	61
163G—Fayette silt loam, 25 to 40 percent slopes	61
165—Stronghurst silt loam, 0 to 2 percent slopes	62
171C2—Bassett loam, 5 to 9 percent slopes, moderately eroded	62
171D2—Bassett loam, 9 to 14 percent slopes, moderately eroded	63
171D3—Bassett loam, 9 to 14 percent slopes, severely eroded	63
171E2—Bassett loam, 14 to 18 percent slopes, moderately eroded	64
171E3—Bassett loam, 14 to 18 percent slopes, severely eroded	64
172—Wabash silty clay, 0 to 2 percent slopes, occasionally flooded	65
175—Dickinson fine sandy loam, 0 to 2 percent slopes	65
175B—Dickinson fine sandy loam, 2 to 5 percent slopes	65
175C—Dickinson fine sandy loam, 5 to 9 percent slopes	66
178—Waukee loam, 0 to 2 percent slopes	66
178B—Waukee loam, 2 to 5 percent slopes	67
178C—Waukee loam, 5 to 9 percent slopes	67
179D2—Gara loam, 9 to 14 percent slopes, moderately eroded	67
179D3—Gara clay loam, 9 to 14 percent slopes, severely eroded	68
179E2—Gara loam, 14 to 18 percent slopes, moderately eroded	69
179E3—Gara clay loam, 14 to 18 percent slopes, severely eroded	69
179F2—Gara loam, 18 to 25 percent slopes, moderately eroded	70
179F3—Gara clay loam, 18 to 25 percent slopes, severely eroded	70
180—Keomah silt loam, 0 to 2 percent slopes	71
192D2—Adair silty clay loam, 9 to 14 percent slopes, moderately eroded	71
192D3—Adair clay loam, 9 to 14 percent slopes, severely eroded	72
220—Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded	72
279—Taintor silty clay loam, 0 to 2 percent slopes	73
280—Mahaska silty clay loam, 0 to 2 percent slopes	73
281B—Otley silty clay loam, 2 to 5 percent slopes	74
281C—Otley silty clay loam, 5 to 9 percent slopes	75
281C2—Otley silty clay loam, 5 to 9 percent slopes, moderately eroded	75
281D2—Otley silty clay loam, 9 to 14 percent slopes, moderately eroded	76
281D3—Otley silty clay loam, 9 to 14 percent slopes, severely eroded	76
281E2—Otley silty clay loam, 14 to 18 percent slopes, moderately eroded	77
291—Atterberry silt loam, 0 to 2 percent slopes	77
293C—Fayette-Chelsea-Tell complex, 5 to 9 percent slopes	78
293D—Fayette-Chelsea-Tell complex, 9 to 14 percent slopes	79
293D2—Fayette-Chelsea-Tell complex, 9 to 14 percent slopes, moderately eroded	79
293E—Fayette-Chelsea-Tell complex, 14 to 18 percent slopes	80
293E2—Fayette-Chelsea-Tell complex, 14 to 18 percent slopes, moderately eroded	81
293G—Fayette-Chelsea-Tell complex, 18 to 40 percent slopes	82
353B—Tell silt loam, 2 to 5 percent slopes	83
353C—Tell silt loam, 5 to 9 percent slopes	83
353C2—Tell silt loam, 5 to 9 percent slopes, moderately eroded	84
353D2—Tell silt loam, 9 to 14 percent slopes, moderately eroded	84
377B—Dinsdale silty clay loam, 2 to 5 percent slopes	85
377C—Dinsdale silty clay loam, 5 to 9 percent slopes	85

420—Tama silty clay loam, terrace, 0 to 2 percent slopes	85
420B—Tama silty clay loam, terrace, 2 to 5 percent slopes	86
422—Amana silt loam, 0 to 2 percent slopes, occasionally flooded	86
424D2—Lindley-Keswick complex, 9 to 14 percent slopes, moderately eroded	87
424E2—Lindley-Keswick complex, 14 to 18 percent slopes, moderately eroded	87
424E3—Lindley-Keswick complex, 14 to 18 percent slopes, severely eroded	89
424F2—Lindley-Keswick complex, 18 to 25 percent slopes, moderately eroded	89
425D2—Keswick silty clay loam, 9 to 14 percent slopes, moderately eroded	90
425D3—Keswick clay loam, 9 to 14 percent slopes, severely eroded	91
428B—Ely silty clay loam, 2 to 5 percent slopes	91
430—Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded	92
450—Pilot silt loam, 0 to 2 percent slopes	92
450B—Pilot silt loam, 2 to 5 percent slopes	92
450C—Pilot silt loam, 5 to 9 percent slopes	93
453—Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded	93
462B—Downs silt loam, terrace, 2 to 5 percent slopes	94
463B—Fayette silt loam, terrace, 2 to 5 percent slopes	94
463C2—Fayette silt loam, terrace, 5 to 9 percent slopes, moderately eroded	95
463D2—Fayette silt loam, terrace, 9 to 14 percent slopes, moderately eroded	95
463D3—Fayette silty clay loam, terrace, 9 to 14 percent slopes, severely eroded	96
463E2—Fayette silt loam, terrace, 14 to 18 percent slopes, moderately eroded ...	96
463E3—Fayette silty clay loam, terrace, 14 to 18 percent slopes, severely eroded	96
463F2—Fayette silt loam, terrace, 18 to 25 percent slopes, moderately eroded ...	97
463F3—Fayette silty clay loam, terrace, 18 to 25 percent slopes, severely eroded	97
484—Lawson silt loam, 0 to 2 percent slopes, occasionally flooded	98
587—Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded	98
587+—Chequest silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	99
626—Hayfield silt loam, 0 to 2 percent slopes	100
663D2—Seaton silt loam, 9 to 14 percent slopes, moderately eroded	100
663E2—Seaton silt loam, 14 to 18 percent slopes, moderately eroded	101
663E3—Seaton silt loam, 14 to 18 percent slopes, severely eroded	101
663F2—Seaton silt loam, 18 to 25 percent slopes, moderately eroded	102
687—Watkins silt loam, 0 to 2 percent slopes, rarely flooded	102
687B—Watkins silt loam, 2 to 5 percent slopes, rarely flooded	103
688—Koszta silt loam, 0 to 2 percent slopes, rarely flooded	103
771B—Waubee silt loam, 2 to 5 percent slopes	104
771C2—Waubee silt loam, 5 to 9 percent slopes, moderately eroded	104
792D2—Armstrong silty clay loam, 9 to 14 percent slopes, moderately eroded	105
876B—Ladoga silt loam, terrace, 2 to 5 percent slopes	105
876C—Ladoga silt loam, terrace, 5 to 9 percent slopes	106
876C2—Ladoga silt loam, terrace, 5 to 9 percent slopes, moderately eroded	106
876D2—Ladoga silt loam, terrace, 9 to 14 percent slopes, moderately eroded	107
881B—Otley silty clay loam, terrace, 2 to 5 percent slopes	107
911B—Colo-Ely complex, 2 to 5 percent slopes	108
993D2—Gara-Armstrong complex, 9 to 14 percent slopes, moderately eroded	108

993E2—Gara-Armstrong complex, 14 to 18 percent slopes, moderately eroded	110
993F2—Gara-Armstrong complex, 18 to 25 percent slopes, moderately eroded	111
1160—Walford silt loam, terrace, 0 to 2 percent slopes	112
1220—Nodaway silt loam, 0 to 2 percent slopes, channeled, frequently flooded	112
1291—Atterberry silt loam, terrace, 0 to 2 percent slopes	113
1354—Aquents, ponded	113
1442B—Tama-Sparta-Pilot complex, 2 to 5 percent slopes	114
1442C—Tama-Sparta-Pilot complex, 5 to 9 percent slopes	115
1442C2—Tama-Sparta-Pilot complex, 5 to 9 percent slopes, moderately eroded	116
1442D2—Tama-Sparta-Pilot complex, 9 to 14 percent slopes, moderately eroded	117
1442E2—Tama-Sparta-Pilot complex, 14 to 18 percent slopes, moderately eroded	118
1540—Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded	119
2219—Ella silt loam, 0 to 2 percent slopes, rarely flooded	120
2219B—Ella silt loam, 2 to 5 percent slopes, rarely flooded	121
2219C2—Ella silt loam, 5 to 9 percent slopes, moderately eroded, rarely flooded	122
2422—Amana-Nodaway-Lawson complex, 0 to 2 percent slopes, occasionally flooded	122
4946—Udorthents-Interstate highway complex, 0 to 5 percent slopes	123
5010—Pits, sand and gravel	124
5040—Udorthents, loamy	124
6220—Nodaway silt loam, 0 to 2 percent slopes, frequently flooded	124
6422—Amana silt loam, 0 to 2 percent slopes, frequently flooded	125
AW—Animal waste lagoon	125
SL—Sewage lagoon	125
W—Water	125
Classification of the Soils	127
Soil Series and Their Morphology	128
Ackmore Series	128
Adair Series	129
Amana Series	131
Armstrong Series	132
Atterberry Series	134
Bassett Series	135
Bremer Series	137
Chelsea Series	138
Chequest Series	139
Clinton Series	140
Colo Series	142
Dickinson Series	143
Dinsdale Series	144
Downs Series	146
Ella Series	147
Ely Series	149
Fayette Series	150
Gara Series	152
Garwin Series	153
Givin Series	155

Greenbush Series	156
Hayfield Series	158
Jackson Series	159
Judson Series	160
Kenyon Series	162
Keomah Series	163
Keswick Series	165
Klum Series	167
Koszta Series	168
Ladoga Series	169
Lawson Series	170
Lindley Series	171
Mahaska Series	173
Muscatine Series	174
Nevin Series	176
Nodaway Series	177
Oско Series	178
Otley Series	179
Pilot Series	181
Quiver Series	182
Rozetta Series	183
Seaton Series	184
Shelby Series	186
Sparta Series	187
Sperry Series	188
Stronghurst Series	190
Taintor Series	191
Tama Series	193
Tell Series	194
Timula Series	195
Tuskeego Series	196
Udolpho Series	198
Vesser Series	199
Wabash Series	201
Walford Series	202
Watkins Series	203
Waubek Series	205
Waukee Series	207
Wiota Series	208
Zook Series	209
Formation of the Soils	211
Factors of Soil Formation	211
Parent Material	211
Climate	213
Living Organisms	214
Relief	214
Time	215
Processes of Horizon Differentiation	215
References	217
Glossary	219

Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, foresters, and agronomists can use the surveys to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the surveys to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, and information on specific uses is given. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Richard W. Van Klaveren
State Conservationist
Natural Resources Conservation Service

Soil Survey of Iowa County, Iowa

By Sam R. Steckly, Natural Resources Conservation Service

Fieldwork by Robert O. Dideriksen, Mark R. LaVan, Kevin K. Norwood, Sam R. Steckly, and Jason E. Steele, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University; and the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship

IOWA COUNTY is in the east-central part of Iowa ([fig. 1](#)). It has an area of 376,100 acres, or about 588 square miles. Marengo is the county seat. It is in the north-central part of the county, about 80 miles east of Des Moines.

This survey updates the survey of Iowa County published in 1967 (Highland and Dideriksen, 1967). It provides additional information and has larger maps, which show the soils in greater detail.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil

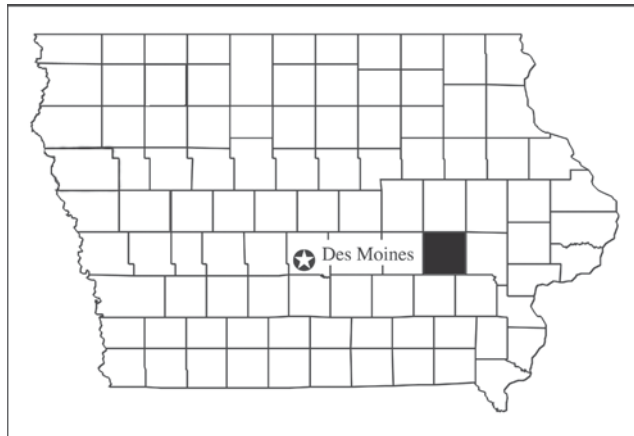


Figure 1.—Location of Iowa County in Iowa.

scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of an improved understanding of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Nature of the Survey Area

Steve Johnston, Iowa County District Conservationist, Natural Resources Conservation Service, helped prepare this section.

This section provides general information about the survey area. It describes history, industry, transportation facilities, recreation, agriculture, physiography, drainage, and climate.

History

Iowa County derives its name from the Ioway Indian tribe. The Iowa River runs through the northern part of the county.

The survey area, in the Missouri Territory, was part of the Louisiana Purchase of 1803. A treaty signed with the Sac and Fox Indians in 1833, known as the Black Hawk purchase, opened the way for legal settlement. Iowa County was settled soon afterwards and became a county in 1845. Marengo, the county seat, was established on August 13, 1845. The current county courthouse was built in 1892. According to the 2000 census, Marengo had a population of 2,535. Williamsburg, located on a bend in Old Man's Creek, was founded in 1854 by Welshman Richard Williams, who operated a stream sawmill north of the creek. Mr. Williams selected the town site because he thought that the Rock Island railroad route would pass through the area. Williamsburg is the largest city in the county, with 2,622 residents. The population of the county was 15,671 in 2000.

Industry

Industry in Iowa County is a mixture of agriculture, manufacturing, retail, and tourism. Manufacturing includes auto body parts, refrigerators and freezers, and corn planters and grain wagons. Agribusiness production includes a major seed corn producer. Many residents also commute to Iowa City (26 miles) or Cedar Rapids (45 miles) to work in manufacturing, in aviation equipment production, or at the University of Iowa. Per capita retail sales are above the State average. There is an outlet mall near Williamsburg, and several motels and restaurants are along Interstate 80. The Amana Colonies are a national historical landmark attracting more than 1 million visitors each year.

Transportation Facilities

Interstate 80 runs east to west through the center of Iowa County. It is the main east-to-west interstate highway through the United States. State Highway 21 runs north to south along the western edge of the county, linking Victor and Belle Plaine with Keokuk County and points south. Highway 151 runs southwest to northeast, linking Sigourney to the Amanas and Cedar Rapids. State Highway 6 runs east to west in the northern part of the county, linking Poweshiek County and Iowa City. Hard-surfaced county roads provide access from rural areas and small towns to Interstate 80 and the State highways. Nearly all rural residents live along farm-to-market roads surfaced with crushed limestone. Iowa County, with its numerous rivers and creeks,

has many bridges. In recent years, bridge replacement has lagged because of high costs. Many farm-to-market roads have been abandoned or closed.

Iowa County is served by two railroads. The Iowa Interstate Line runs from Omaha to Chicago along Highway 6 through Victor, Ladora, Marengo, South Amana, and Homestead. The Cedar Rapids-Iowa City Railroad runs from Cedar Rapids to Iowa City and passes through the Amanas. Trucking companies provide most of the freight service to Iowa County. Several trucking companies are located in the county, including two near Williamsburg. The Eastern Iowa Airport is south of Cedar Rapids, approximately 20 miles north of Amana. The county has no commercial bus service.

Recreation

The Iowa County Conservation Board manages 10 park and natural access areas in the county. The largest park is at Lake Iowa, about 10 miles west of Williamsburg (fig. 2). Lake Iowa is 94 acres of water surrounded by 500 acres of parkland. The lake was built in 1963. Several land treatment watershed projects have been completed by the Iowa County Soil and Water Conservation District and the Natural Resources Conservation Service. Other county recreational areas include the tri-county Fuller Wetland Access Area in the southeast corner of the county and the new Iowa River Gateway Park in Marengo.

The largest block of recreational land in the county is in the Iowa River Corridor. The Iowa River Corridor, established in 1995, follows the landmark flood of 1993 on the Iowa River. The Corridor includes approximately 50,000 acres of flood plain along 45 miles of river from the Amana Colonies to Tama. In Iowa County, almost 5,000 acres of the Corridor is enrolled in USDA Wetland Reserve programs. Overall, the U.S. Fish and Wildlife Service owns nearly 12,000 acres of wetlands and flood plains in the



Figure 2.—Lake Iowa, west of Williamsburg, is the largest constructed body of water in Iowa County. It was built in 1963.

Corridor. The Federal land is managed by the Iowa Department of Natural Resources. These areas provide recreational opportunities, including hunting, fishing, river access, and hiking. In 2004, the North American Bird Conservation Initiative dedicated the Iowa River Corridor Bird Conservation Area. The Corridor also includes roads that have been designated as Iowa Scenic Byways.

The Amana Colonies are on the National Register of Historical Places. They were settled in 1855 by a group of German-speaking European settlers who established a communal system of living. The colonies include more than 26,000 acres of cropland, pasture, and forestland. The Amana Colonies also provide recreational opportunities, such as the Amana Lily Pond (fig. 3), a 170-acre wetland formed by flooding from the Mill Race, located between Middle Amana and Main Amana. The Mill Race, built between 1865 and 1869, is a canal 7 miles long that provided water from the Iowa River to various mills throughout the colonies. The Mill Race is still in operation and is a National Historical Landmark. The Lily Pond nature trail follows the Mill Race from Main Amana to Middle Amana and circles the Lily Pond. The Iowa River nature trail, operated by the County Conservation Board, is located near Homestead and offers a trail through the hardwood forest to the bluffs along the Iowa River.

The Coralville Reservoir, operated by the U.S. Army Corps of Engineers and the Iowa Department of Natural Resources, is about 10 miles downstream from the Amana Colonies. The 5,430-acre lake offers boating, camping, and other recreational activities to area residents. The backwaters of the reservoir reach into Iowa County during periods when water levels are high.

Agriculture

About 85 percent of Iowa County is agricultural land, 8 percent is urban or built-up land, and 7 percent is woodland. The county has about 1,020 farms with an average size of 333 acres. The farms raise corn, soybeans, forage, and some small grain. In 2004, 204,000 acres was used for production of grain crops, including 115,000 acres of corn and 84,000 acres of soybeans; the remaining acreage was used for oats and wheat. Hay was produced on 22,000 acres. Land in the county enrolled in the Conservation Reserve Program includes more than 38,000 acres of cropland that has been taken out of production and seeded to a cover of mixed native grasses or cool-season grasses for the enhancement of wildlife habitat.

Livestock operations feature cow/calf herds, swine confinements, some cattle feedlots, and dairies. According to the 2002 Iowa Agricultural Census, 388 farms had 44,000 head of cattle, including 20,000 beef cows, and 101,000 hogs. There were 1,200 dairy cows. Herd numbers, particularly those of hogs, are declining; hog production has declined by two-thirds since 1992. Eighty producers are involved in production of sheep, chickens, eggs, and turkeys.

Physiography

Iowa County is a gently rolling to steep upland plain, deeply dissected in places by rivers and streams. The area immediately north of the Iowa River is characterized by an intricate pattern of deep valleys and ravines that have steep slopes. Small streams extend back into the uplands.

The bottom land along the Iowa River is nearly level. The alluvial terraces away from the river are nearly level to undulating.

Hills on either side of the flood plain rise 100 to 200 feet above the river. In places these hills are 50 to 100 feet above the level of the plain into which they merge.

The northern corner of Lenox Township, for the most part, has level or gently undulating topography that is characteristic of what has been called the Iowan drift plain.



Figure 3.—The Amana Lily Pond supplies water to the Mill Race, which generates energy for the woolen mill in Main Amana.

In a broad curve from east to west across the central part of the county is a more nearly level plain, 4 or 5 miles wide, called the divide. This plain, which represents the greatest part of the original prairie land of the county, separates the Iowa and English Rivers. The English River, its tributaries, and many small intermittent streams have cut steep valleys along this entire area. The slope in this area increases toward the stream channels.

Drainage

Streams and intermittent drainageways have dissected practically all parts of the county. The Iowa River extends from west to east through the northern part. Honey Creek, Big Bear Creek, and Little Bear Creek are the main tributaries flowing into the Iowa River from the south. Price Creek, which flows almost at right angles into the Iowa River, is the main tributary from the north. From Conroy eastward, the area is drained by Clear Creek. Hog Run joins Old Man's Creek west of Williamsburg to drain the area east of Williamsburg and Parnell. The southern part of the county is drained by the English River and its tributaries.

The drainage system is well developed and is adequate in most parts of the county. However, artificial drainage is needed in some depressed areas on uplands and in areas on bottom land that are above the ordinary level of overflow but that receive runoff from surrounding steep uplands.

Climate

[Table 1](#) gives data on temperature and precipitation for the survey area as recorded at Williamsburg in the period 1971 to 2000. [Table 2](#) shows probable dates of the first freeze in fall and last freeze in spring. [Table 3](#) provides data on the length of the growing season.

In winter, the average temperature is 23.3 degrees F and the average daily minimum temperature is 14.4 degrees. The lowest temperature during the period of record is -31 degrees. In summer, the average temperature is 72.5 degrees and the average daily maximum temperature is 83.5 degrees. The highest temperature during the period of record is 105 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 36.66 inches. Of this total, 25.76 inches, or about 70 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 12.65 inches.

The average seasonal snowfall is about 31 inches. On the average, 49 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

Table 1.--Temperature and Precipitation
(Recorded in the period 1971-2000 at Williamsburg, Iowa)

	Temperature						Precipitation				
Month				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	28.6	10.4	19.5	56	-21	3	1.08	0.57	1.52	3	9.0
February---	35.0	16.5	25.7	65	-18	17	1.03	.38	1.63	3	6.3
March-----	47.6	27.5	37.6	80	0	104	2.12	.85	3.39	5	3.5
April-----	61.4	37.9	49.7	86	16	316	3.44	1.79	4.91	6	1.9
May-----	72.5	49.8	61.1	90	31	656	4.71	2.19	7.03	8	.0
June-----	81.7	59.7	70.7	95	43	921	4.72	2.63	6.80	7	.0
July-----	85.4	63.8	74.6	99	48	1,073	4.35	1.85	6.71	6	.0
August-----	83.3	61.3	72.3	97	46	1,000	4.76	2.13	7.18	6	.0
September--	76.1	52.5	64.3	94	32	726	3.78	2.06	5.53	6	.0
October----	64.3	40.6	52.4	87	20	394	2.59	1.06	3.96	5	.4
November---	47.1	28.4	37.7	73	3	95	2.60	.91	4.30	5	2.5
December---	33.3	16.2	24.7	61	-14	11	1.48	.59	2.28	4	7.5
Yearly:											
Average---	59.7	38.7	49.2	---	---	---	---	---	---	---	---
Extreme---	105	-31	---	99	-23	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,316	36.66	28.22	43.86	64	31.1

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Williamsburg, Iowa)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 17	Apr. 24	May 11
2 years in 10 later than--	Apr. 13	Apr. 20	May 7
5 years in 10 later than--	Apr. 5	Apr. 12	Apr. 28
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 15	Oct. 5	Sept. 23
2 years in 10 earlier than--	Oct. 20	Oct. 10	Sept. 27
5 years in 10 earlier than--	Oct. 30	Oct. 19	Oct. 6

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Williamsburg, Iowa)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	190	169	143
8 years in 10	195	176	150
5 years in 10	206	188	162
2 years in 10	216	200	174
1 year in 10	222	207	181

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. These broad areas are called associations. Each association on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one association can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1—Otley-Mahaska-Shelby Association ([fig. 4](#))

Extent of the association in the survey area: 20 percent

Component Description

Otley

Extent: 60 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Mahaska

Extent: 13 percent of the association

Position on the landscape: Flats on uplands

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

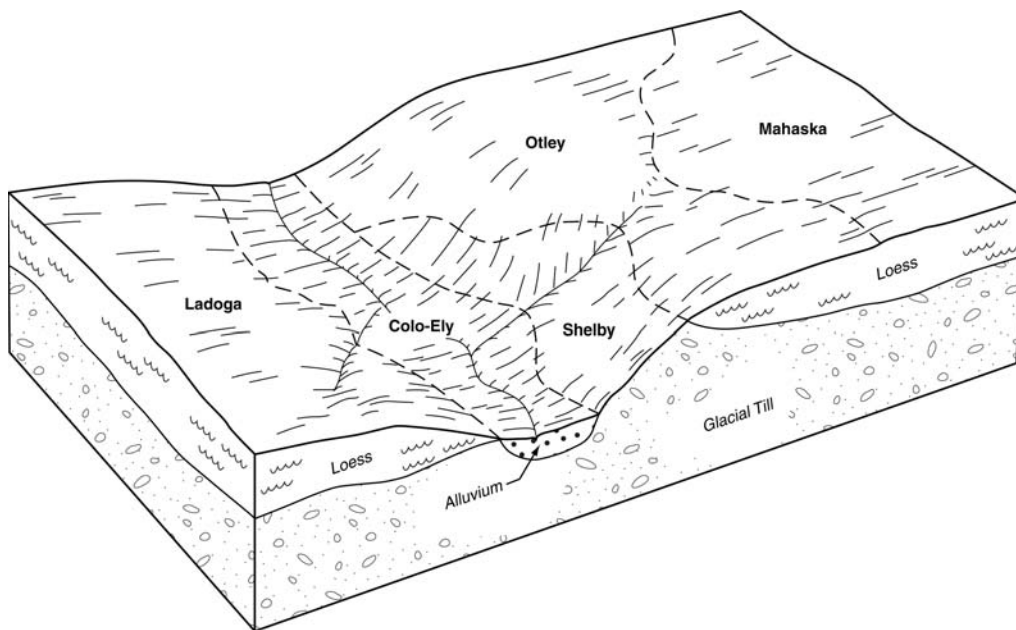


Figure 4.—Typical pattern of soils and parent material in the Otley-Mahaska-Shelby association.

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.0 inches

Content of organic matter in the upper 10 inches: 4.8 percent

Shelby

Extent: 12 percent of the association

Position on the landscape: Side slopes and shoulders

Slope range: 5 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Soils of Minor Extent

Ladoga

Extent: 5 percent of the association

Colo

Extent: 5 percent of the association

Ely

Extent: 5 percent of the association

2—Colo-Nevin-Nodaway Association (fig. 5)

Extent of the association in the survey area: 16 percent

Component Description

Colo

Extent: 37 percent of the association

Position on the landscape: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 5.5 percent

Nevin

Extent: 17 percent of the association

Position on the landscape: Stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

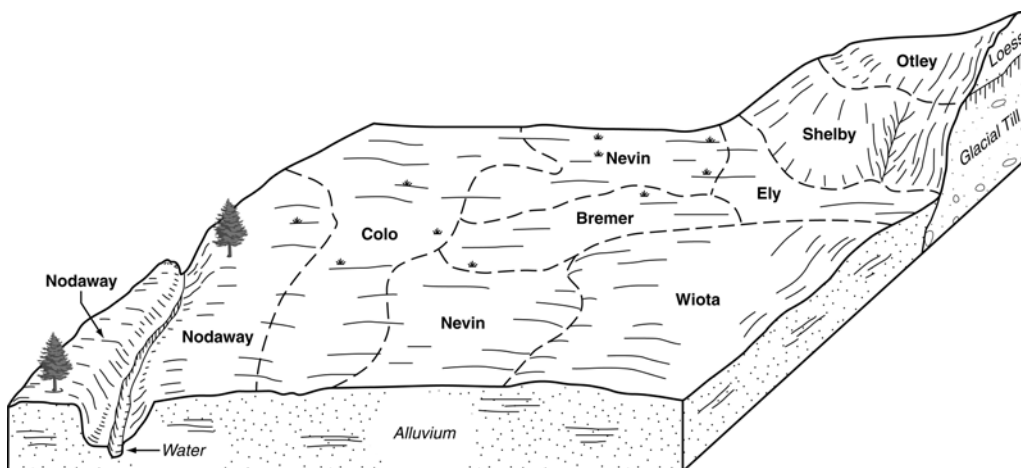


Figure 5.—Typical pattern of soils and parent material in the Colo-Nevin-Nodaway association.

Ponding: None

Available water capacity to a depth of 60 inches: 12.3 inches

Content of organic matter in the upper 10 inches: 4.8 percent

Nodaway

Extent: 16 percent of the association

Position on the landscape: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 13.2 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Soils of Minor Extent

Amana

Extent: 13 percent of the association

Bremer

Extent: 9 percent of the association

Wiota

Extent: 8 percent of the association

3—Tama-Downs Association

Extent of the association in the survey area: 11 percent

Component Description

Tama

Extent: 42 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Downs

Extent: 28 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Soils of Minor Extent

Gara

Extent: 8 percent of the association

Colo

Extent: 8 percent of the association

Sparta

Extent: 7 percent of the association

Ely

Extent: 7 percent of the association

4—Ladoga-Clinton-Lindley Association

Extent of the association in the survey area: 33 percent

Component Description

Ladoga

Extent: 30 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Clinton

Extent: 27 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Lindley

Extent: 16 percent of the association

Position on the landscape: Side slopes and shoulders

Slope range: 9 to 40 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.3 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Soils of Minor Extent**Gara**

Extent: 11 percent of the association

Otley

Extent: 6 percent of the association

Colo

Extent: 5 percent of the association

Ely

Extent: 5 percent of the association

5—Fayette-Downs Association (fig. 6)

Extent of the association in the survey area: 17 percent

Component Description**Fayette**

Extent: 51 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes; treads and risers on stream terraces

Slope range: 2 to 40 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Downs

Extent: 18 percent of the association

Position on the landscape: Ridgetops, shoulders, and side slopes

Slope range: 2 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

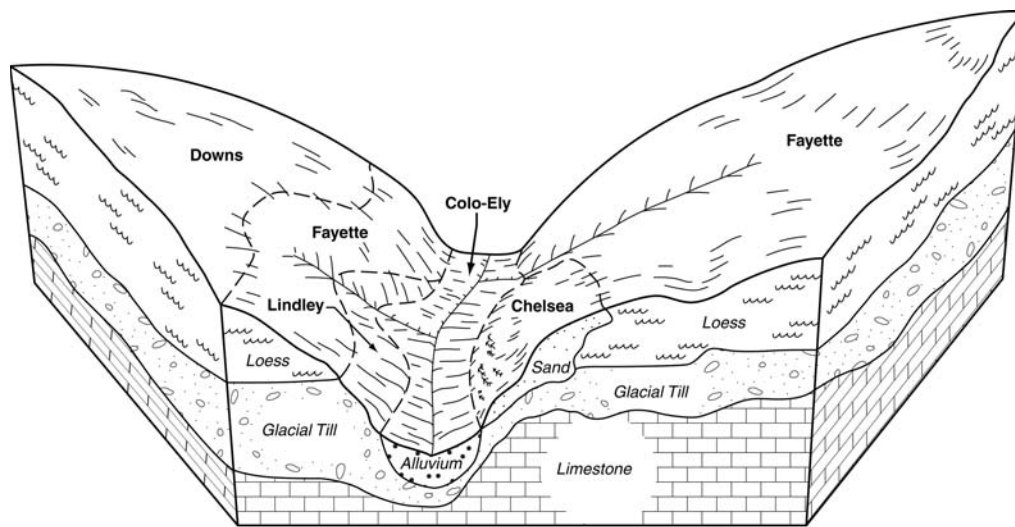


Figure 6.—Typical pattern of soils and parent material in the Fayette-Downs association.

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Soils of Minor Extent

Lindley

Extent: 9 percent of the association

Chelsea

Extent: 8 percent of the association

Tell

Extent: 6 percent of the association

Colo

Extent: 4 percent of the association

Ely

Extent: 4 percent of the association

6—Dinsdale-Kenyon-Bassett Association

Extent of the association in the survey area: 3 percent

Component Description

Dinsdale

Extent: 33 percent of the association

Position on the landscape: Ridgetops and shoulders

Slope range: 2 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)
Deepest depth to wet zone: 6.5 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 11.7 inches
Content of organic matter in the upper 10 inches: 4.0 percent

Kenyon

Extent: 22 percent of the association
Position on the landscape: Ridgetops, shoulders, and side slopes
Slope range: 2 to 14 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Loamy sediments and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 4.0 feet (April)
Deepest depth to wet zone: 6.5 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 11.3 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Bassett

Extent: 21 percent of the association
Position on the landscape: Ridgetops, shoulders, and side slopes
Slope range: 5 to 18 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Loamy sediments and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 4.0 feet (April)
Deepest depth to wet zone: 6.5 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 10.9 inches
Content of organic matter in the upper 10 inches: 2.5 percent

Soils of Minor Extent

Sparta

Extent: 10 percent of the association

Waukee

Extent: 7 percent of the association

Hayfield

Extent: 7 percent of the association

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and lists some of the principal soil properties that should be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown

on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Otley silty clay loam, 9 to 14 percent slopes, moderately eroded, is a phase of the Otley series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Colo-Ely complex, 2 to 5 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, sand and gravel, is an example.

The table “[Acreage and Proportionate Extent of the Soils](#)” in Part II lists the map units in this survey area. Other tables provided in Part II give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

5B—Ackmore-Colo complex, 2 to 5 percent slopes

Component Description

Ackmore and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Upland drainageways

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 2.8 percent

Colo and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Upland drainageways

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Flooding: None

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 5.5 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 10 to 20 percent of the unit

Colo, frequently flooded, and similar soils

Extent: 0 to 10 percent of the unit

7—Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded***Component Description*****Wiota, rarely flooded, and similar soils**

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.0 inches

Content of organic matter in the upper 10 inches: 3.5 percent

7B—Wiota silty clay loam, 2 to 5 percent slopes, rarely flooded***Component Description*****Wiota, rarely flooded, and similar soils**

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.0 inches

Content of organic matter in the upper 10 inches: 3.5 percent

8B—Judson silty clay loam, 2 to 5 percent slopes***Component Description*****Judson and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Footslopes and alluvial fans

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty colluvium
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 4.3 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

24C2—Shelby loam, 5 to 9 percent slopes, moderately eroded

Component Description

Shelby, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Shoulders and side slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components

Otley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Adair, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

24D2—Shelby loam, 9 to 14 percent slopes, moderately eroded

Component Description

Shelby, moderately eroded, and similar soils

Extent: 65 to 75 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components

Otley and similar soils

Extent: 5 to 15 percent of the unit

Shelby soils that are only slightly eroded

Extent: 5 to 15 percent of the unit

Adair, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

24D3—Shelby clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Shelby, severely eroded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Adair, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Otley, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

24E2—Shelby loam, 14 to 18 percent slopes, moderately eroded

Component Description

Shelby, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components

Adair, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Otley, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

24E3—Shelby clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Shelby, severely eroded, and similar soils

Extent: 90 to 100 percent of the unit
Landscape position: Side slopes
Slope range: 14 to 18 percent
Texture of the surface layer: Clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Otley, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

41—Sparta loamy fine sand, 0 to 2 percent slopes

Component Description

Sparta and similar soils

Extent: 100 percent of the unit
Landscape position: Treads on stream terraces
Slope range: 0 to 2 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash deposits reworked by wind
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None

Available water capacity to a depth of 60 inches: 5.2 inches
Content of organic matter in the upper 10 inches: 1.5 percent

41B—Sparta loamy fine sand, 2 to 5 percent slopes

Component Description

Sparta and similar soils

Extent: 100 percent of the unit
Landscape position: Upland summits; treads on stream terraces
Slope range: 2 to 5 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash deposits reworked by wind
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 5.2 inches
Content of organic matter in the upper 10 inches: 1.5 percent

41C—Sparta loamy fine sand, 5 to 9 percent slopes

Component Description

Sparta and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Upland side slopes; risers on stream terraces
Slope range: 5 to 9 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash deposits reworked by wind
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 5.2 inches
Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components

Chelsea and similar soils

Extent: 5 to 15 percent of the unit

Pillot and similar soils

Extent: 0 to 10 percent of the unit

41D—Sparta loamy fine sand, 9 to 14 percent slopes

Component Description

Sparta and similar soils

Extent: 70 to 80 percent of the unit
Landscape position: Upland side slopes; risers on stream terraces
Slope range: 9 to 14 percent
Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Sandy outwash deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.2 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components

Dickinson and similar soils

Extent: 5 to 15 percent of the unit

Tama and similar soils

Extent: 5 to 15 percent of the unit

Chelsea and similar soils

Extent: 0 to 10 percent of the unit

43—Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Bremer, rarely flooded, and similar soils

Extent: 100 percent of the unit

Landscape position: Stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 6.0 percent

51—Vesser silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Vesser, occasionally flooded, and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Nevin, rarely flooded, and similar soils

Extent: 0 to 10 percent of the unit

54—Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Zook, occasionally flooded, and similar soils

Extent: 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.4 inches

Content of organic matter in the upper 10 inches: 6.0 percent

54+—Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash

Component Description

Zook, occasionally flooded, overwash, and similar soils

Extent: 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.4 inches

Content of organic matter in the upper 10 inches: 3.5 percent

63C—Chelsea loamy fine sand, 2 to 9 percent slopes

Component Description

Chelsea and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Summits and shoulders

Slope range: 2 to 9 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Eolian sands

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 4.4 inches

Content of organic matter in the upper 10 inches: 0.4 percent

Minor Dissimilar Components

Fayette and similar soils

Extent: 5 to 15 percent of the unit

63E—Chelsea loamy fine sand, 9 to 18 percent slopes

Component Description

Chelsea and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 18 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Eolian sands

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 4.4 inches

Content of organic matter in the upper 10 inches: 0.4 percent

Minor Dissimilar Components

Fayette and similar soils

Extent: 0 to 10 percent of the unit

63G—Chelsea loamy fine sand, 18 to 40 percent slopes

Component Description

Chelsea and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Side slopes
Slope range: 18 to 40 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Eolian sands
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 4.4 inches
Content of organic matter in the upper 10 inches: 0.4 percent

Minor Dissimilar Components

Fayette and similar soils

Extent: 0 to 10 percent of the unit

65D2—Lindley loam, 9 to 14 percent slopes, moderately eroded

Component Description

Lindley, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.3 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Clinton, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Keswick, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

65D3—Lindley clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Lindley, severely eroded, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Lindley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Clinton, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

65E2—Lindley loam, 14 to 18 percent slopes, moderately eroded

Component Description

Lindley, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Side slopes
Slope range: 14 to 18 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.3 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

Keswick, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

65E3—Lindley clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Lindley, severely eroded, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Side slopes
Slope range: 14 to 18 percent

Texture of the surface layer: Clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Lindley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

65F—Lindley loam, 18 to 25 percent slopes

Component Description

Lindley and similar soils

Extent: 100 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.4 inches
Content of organic matter in the upper 10 inches: 1.2 percent

65F2—Lindley loam, 18 to 25 percent slopes, moderately eroded

Component Description

Lindley, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.3 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Keswick, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

65F3—Lindley clay loam, 18 to 25 percent slopes, severely eroded

Component Description

Lindley, severely eroded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.1 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Lindley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

65G—Lindley loam, 25 to 40 percent slopes

Component Description

Lindley and similar soils

Extent: 100 percent of the unit

Landscape position: Side slopes

Slope range: 25 to 40 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.4 inches

Content of organic matter in the upper 10 inches: 1.2 percent

75—Givin silt loam, 0 to 2 percent slopes

Component Description

Givin and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Upland flats
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Loess
Flooding: None
Shallowest depth to wet zone: 1.0 foot (April)
Deepest depth to wet zone: 4.0 feet (September)
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ladoga and similar soils

Extent: 0 to 10 percent of the unit

76B—Ladoga silt loam, 2 to 5 percent slopes

Component Description

Ladoga and similar soils

Extent: 90 to 100 percent of the unit
Landscape position: Ridgetops
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Loess
Flooding: None
Shallowest depth to wet zone: 4.0 feet (April)
Deepest depth to wet zone: 6.5 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 11.9 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Givin and similar soils

Extent: 0 to 10 percent of the unit

76C—Ladoga silt loam, 5 to 9 percent slopes

Component Description

Ladoga and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Ridgetops and shoulders
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Loess
Flooding: None
Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ladoga, moderately eroded, and similar soils

Extent: 10 to 20 percent of the unit

76C2—Ladoga silt loam, 5 to 9 percent slopes, moderately eroded

Component Description

Ladoga, moderately eroded, and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Summits and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

76D—Ladoga silt loam, 9 to 14 percent slopes

Component Description

Ladoga and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

Ladoga, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

76D2—Ladoga silt loam, 9 to 14 percent slopes, moderately eroded

Component Description

Ladoga, moderately eroded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes ([fig. 7](#))

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)



Figure 7.—Terraces reduce the length of slopes in areas of Ladoga silt loam, 9 to 14 percent slopes, moderately eroded, and thus reduce the hazard of sheet and rill erosion. They also improve water quality.

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 15 percent of the unit

76D3—Ladoga silty clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Ladoga, severely eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Armstrong, severely eroded, and similar soils

Extent: 0 to 15 percent of the unit

Gara, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ladoga, moderately eroded, and similar soils

Extent: 0 to 15 percent of the unit

76E2—Ladoga silt loam, 14 to 18 percent slopes, moderately eroded

Component Description

Ladoga, moderately eroded, and similar soils

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 15 percent of the unit

Gara, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ladoga, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

76E3—Ladoga silty clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Ladoga, severely eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Gara, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ladoga, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

80B—Clinton silt loam, 2 to 5 percent slopes

Component Description

Clinton and similar soils

Extent: 100 percent of the unit

Landscape position: Summits and ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.2 percent

80C—Clinton silt loam, 5 to 9 percent slopes

Component Description

Clinton and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Ridgetops, shoulders, and side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components

Clinton, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

80C2—Clinton silty clay loam, 5 to 9 percent slopes, moderately eroded

Component Description

Clinton, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Ridgetops, shoulders, and side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Clinton soils that are only slightly eroded

Extent: 10 to 20 percent of the unit

80D—Clinton silt loam, 9 to 14 percent slopes

Component Description

Clinton and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components

Clinton, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Keswick and similar soils

Extent: 0 to 10 percent of the unit

80D2—Clinton silty clay loam, 9 to 14 percent slopes, moderately eroded

Component Description

Clinton, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Clinton, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Lindley, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

80D3—Clinton silty clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Clinton, severely eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Clinton, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

80E2—Clinton silty clay loam, 14 to 18 percent slopes, moderately eroded

Component Description

Clinton, moderately eroded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

Lindley, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

80E3—Clinton silty clay loam, 14 to 18 percent slopes, severely eroded***Component Description*****Clinton, severely eroded, and similar soils**

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components**Clinton, moderately eroded, and similar soils**

Extent: 10 to 20 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

80F2—Clinton silty clay loam, 18 to 25 percent slopes, moderately eroded***Component Description*****Clinton, moderately eroded, and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Lindley, moderately eroded, and similar soils**

Extent: 5 to 15 percent of the unit

83B—Kenyon loam, 2 to 5 percent slopes***Component Description*****Kenyon and similar soils**

Extent: 70 to 80 percent of the unit

Landscape position: Ridgetops and summits

Slope range: 2 to 5 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: More than 6.7 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.3 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components**Dinsdale and similar soils**

Extent: 20 to 30 percent of the unit

83C—Kenyon loam, 5 to 9 percent slopes***Component Description*****Kenyon and similar soils**

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.3 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components**Dinsdale and similar soils**

Extent: 5 to 15 percent of the unit

Kenyon, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

83C2—Kenyon loam, 5 to 9 percent slopes, moderately eroded

Component Description

Kenyon, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Dinsdale, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

83D2—Kenyon loam, 9 to 14 percent slopes, moderately eroded

Component Description

Kenyon, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Kenyon soils that are only slightly eroded

Extent: 10 to 20 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

88—Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Nevin, rarely flooded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.3 inches

Content of organic matter in the upper 10 inches: 5.0 percent

Minor Dissimilar Components

Bremer, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

93D2—Shelby-Adair complex, 9 to 14 percent slopes, moderately eroded

Component Description

Shelby, moderately eroded, and similar soils

Extent: 45 to 55 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Adair, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol weathered from glacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.5 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Otley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

93D3—Shelby-Adair complex, 9 to 14 percent slopes, severely eroded

Component Description

Shelby, severely eroded, and similar soils

Extent: 45 to 55 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Adair, severely eroded, and similar soils

Extent: 25 to 35 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol weathered from glacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Shelby, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Otley, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

93E2—Shelby-Adair complex, 14 to 18 percent slopes, moderately eroded***Component Description*****Shelby, moderately eroded, and similar soils**

Extent: 55 to 65 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Adair, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol weathered from glacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.5 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 0 to 10 percent of the unit

119—Muscatine silty clay loam, 0 to 2 percent slopes***Component Description*****Muscatine and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Upland flats

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.2 inches

Content of organic matter in the upper 10 inches: 5.0 percent

Minor Dissimilar Components

Garwin and similar soils

Extent: 0 to 10 percent of the unit

120B—Tama silty clay loam, 2 to 5 percent slopes

Component Description

Tama and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Osko and similar soils

Extent: 0 to 10 percent of the unit

120C—Tama silty clay loam, 5 to 9 percent slopes

Component Description

Tama and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Osko and similar soils

Extent: 5 to 15 percent of the unit

Tama, moderately eroded, and similar soils*Extent:* 0 to 10 percent of the unit**120C2—Tama silty clay loam, 5 to 9 percent slopes,
moderately eroded*****Component Description*****Tama, moderately eroded, and similar soils***Extent:* 65 to 85 percent of the unit*Landscape position:* Side slopes and shoulders*Slope range:* 5 to 9 percent*Texture of the surface layer:* Silty clay loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Well drained*Parent material:* Loess*Flooding:* None*Depth to wet zone:* More than 6.7 feet all year*Ponding:* None*Available water capacity to a depth of 60 inches:* 11.7 inches*Content of organic matter in the upper 10 inches:* 2.3 percent***Minor Dissimilar Components*****Tama soils that are only slightly eroded***Extent:* 10 to 20 percent of the unit**Oско, moderately eroded, and similar soils***Extent:* 5 to 15 percent of the unit**120D2—Tama silty clay loam, 9 to 14 percent slopes,
moderately eroded*****Component Description*****Tama, moderately eroded, and similar soils***Extent:* 80 to 90 percent of the unit*Landscape position:* Side slopes*Slope range:* 9 to 14 percent*Texture of the surface layer:* Silty clay loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Well drained*Parent material:* Loess*Flooding:* None*Depth to wet zone:* More than 6.7 feet all year*Ponding:* None*Available water capacity to a depth of 60 inches:* 11.7 inches*Content of organic matter in the upper 10 inches:* 2.3 percent***Minor Dissimilar Components*****Ely and similar soils***Extent:* 0 to 10 percent of the unit**Tama, slightly eroded, and similar soils***Extent:* 0 to 10 percent of the unit

Tama, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

**120D3—Tama silty clay loam, 9 to 14 percent slopes,
severely eroded*****Component Description*****Tama, severely eroded, and similar soils**

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components**Tama, moderately eroded, and similar soils**

Extent: 15 to 25 percent of the unit

**120E2—Tama silty clay loam, 14 to 18 percent slopes,
moderately eroded*****Component Description*****Tama, moderately eroded, and similar soils**

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components**Tama, severely eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Shelby, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

122—Sperry silt loam, 0 to 1 percent slopes, depressional

Component Description

Sperry and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Shallow upland depressions

Slope range: 0 to 1 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Very poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Months in which ponding does not occur: January, December

Deepest ponding: 0.5 foot (February, March, April, May, June, July, August, September, October, November)

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Taintor and similar soils

Extent: 0 to 10 percent of the unit

133—Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Colo, occasionally flooded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Flood plains ([fig. 8](#))

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 5.5 percent

Minor Dissimilar Components

Colo, occasionally flooded, overwash, and similar soils

Extent: 0 to 10 percent of the unit

Nodaway, occasionally flooded, and similar soils

Extent: 0 to 10 percent of the unit



Figure 8.—A constructed wetland in an area of Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded.

133+—Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash

Component Description

Colo, occasionally flooded, overwash, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 4.0 percent

Minor Dissimilar Components

Ackmore, occasionally flooded, and similar soils

Extent: 5 to 15 percent of the unit

162B—Downs silt loam, 2 to 5 percent slopes***Component Description*****Downs and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components**Greenbush and similar soils**

Extent: 0 to 10 percent of the unit

162C—Downs silt loam, 5 to 9 percent slopes***Component Description*****Downs and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components**Greenbush and similar soils**

Extent: 5 to 15 percent of the unit

Downs, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

**162C2—Downs silt loam, 5 to 9 percent slopes,
moderately eroded*****Component Description*****Downs, moderately eroded, and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Greenbush, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Downs soils that are only slightly eroded

Extent: 0 to 10 percent of the unit

162D2—Downs silt loam, 9 to 14 percent slopes, moderately eroded

Component Description

Downs, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Greenbush, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

162D3—Downs silty clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Downs, severely eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Downs, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Greenbush, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

162E2—Downs silt loam, 14 to 18 percent slopes, moderately eroded

Component Description

Downs, moderately eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Greenbush, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Downs, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Gara, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

162E3—Downs silty clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Downs, severely eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes
Slope range: 14 to 18 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.6 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Downs, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Greenbush, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Gara, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

163B—Fayette silt loam, 2 to 5 percent slopes

Component Description

Fayette and similar soils

Extent: 90 to 100 percent of the unit
Landscape position: Ridgetops
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.7 inches
Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components

Rozetta and similar soils

Extent: 0 to 10 percent of the unit

163C—Fayette silt loam, 5 to 9 percent slopes

Component Description

Fayette and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Ridgetops and shoulders
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components

Rozetta and similar soils

Extent: 5 to 15 percent of the unit

163C2—Fayette silt loam, 5 to 9 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Rozetta, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Fayette soils that are only slightly eroded

Extent: 0 to 10 percent of the unit

163D—Fayette silt loam, 9 to 14 percent slopes

Component Description

Fayette and similar soils

Extent: 75 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components**Rozetta and similar soils**

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

**163D2—Fayette silt loam, 9 to 14 percent slopes,
moderately eroded*****Component Description*****Fayette, moderately eroded, and similar soils**

Extent: 60 to 70 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Fayette soils that are only slightly eroded**

Extent: 5 to 15 percent of the unit

Keswick, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

**163D3—Fayette silty clay loam, 9 to 14 percent slopes,
severely eroded*****Component Description*****Fayette, severely eroded, and similar soils**

Extent: 55 to 65 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Fayette, moderately eroded, and similar soils

Extent: 10 to 20 percent of the unit

Keswick, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

163E—Fayette silt loam, 14 to 18 percent slopes

Component Description

Fayette and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components

Lindley and similar soils

Extent: 5 to 15 percent of the unit

Rozetta and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

163E2—Fayette silt loam, 14 to 18 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, and similar soils

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Lindley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Fayette, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

163E3—Fayette silty clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Fayette, severely eroded, and similar soils

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Fayette, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 0 to 15 percent of the unit

163F—Fayette silt loam, 18 to 25 percent slopes***Component Description*****Fayette and similar soils**

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components**Lindley and similar soils**

Extent: 5 to 15 percent of the unit

Rozetta and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

**163F2—Fayette silt loam, 18 to 25 percent slopes,
moderately eroded*****Component Description*****Fayette, moderately eroded, and similar soils**

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Fayette, severely eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Lindley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

163F3—Fayette silty clay loam, 18 to 25 percent slopes, severely eroded***Component Description*****Fayette, severely eroded, and similar soils**

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components**Fayette, moderately eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Rozetta, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

163G—Fayette silt loam, 25 to 40 percent slopes***Component Description*****Fayette and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 25 to 40 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Minor Dissimilar Components**Lindley and similar soils**

Extent: 5 to 15 percent of the unit

Rozetta and similar soils

Extent: 0 to 10 percent of the unit

165—Stronghurst silt loam, 0 to 2 percent slopes***Component Description*****Stronghurst and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Upland flats

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 1.8 percent

Minor Dissimilar Components**Fayette and similar soils**

Extent: 0 to 10 percent of the unit

171C2—Bassett loam, 5 to 9 percent slopes, moderately eroded***Component Description*****Bassett, moderately eroded, and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components**Bassett soils that are only slightly eroded**

Extent: 5 to 15 percent of the unit

Waubee, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

171D2—Bassett loam, 9 to 14 percent slopes, moderately eroded

Component Description

Bassett, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Bassett soils that are only slightly eroded

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Waubee, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

171D3—Bassett loam, 9 to 14 percent slopes, severely eroded

Component Description

Bassett, severely eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Bassett, moderately eroded, and similar soils

Extent: 15 to 25 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

171E2—Bassett loam, 14 to 18 percent slopes, moderately eroded

Component Description

Bassett, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Bassett, slightly eroded, and similar soils

Extent: 0 to 10 percent of the unit

Bassett, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Waubee, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

171E3—Bassett loam, 14 to 18 percent slopes, severely eroded

Component Description

Bassett, severely eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loamy sediments and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 10.9 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components**Bassett, moderately eroded, and similar soils**

Extent: 15 to 25 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

**172—Wabash silty clay, 0 to 2 percent slopes,
occasionally flooded*****Component Description*****Wabash, occasionally flooded, and similar soils**

Extent: 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July,
August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 6.2 inches

Content of organic matter in the upper 10 inches: 3.0 percent

175—Dickinson fine sandy loam, 0 to 2 percent slopes***Component Description*****Dickinson and similar soils**

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Fine sandy loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Sandy alluvial deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.7 inches

Content of organic matter in the upper 10 inches: 1.4 percent

175B—Dickinson fine sandy loam, 2 to 5 percent slopes***Component Description*****Dickinson and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Treads and risers on stream terraces; ridgetops and shoulders on uplands

Slope range: 2 to 5 percent

Texture of the surface layer: Fine sandy loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Sandy alluvial deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.7 inches

Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Pillot and similar soils

Extent: 0 to 10 percent of the unit

175C—Dickinson fine sandy loam, 5 to 9 percent slopes

Component Description

Dickinson and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Fine sandy loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Sandy alluvial deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.7 inches

Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Sparta and similar soils

Extent: 5 to 15 percent of the unit

Pillot and similar soils

Extent: 0 to 10 percent of the unit

178—Waukee loam, 0 to 2 percent slopes

Component Description

Waukee and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loamy alluvium over sandy and gravelly alluvium

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 7.6 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Dickinson and similar soils

Extent: 5 to 15 percent of the unit

178B—Waukee loam, 2 to 5 percent slopes

Component Description

Waukee and similar soils

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loamy alluvium over sandy and gravelly alluvium

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 7.6 inches

Content of organic matter in the upper 10 inches: 3.5 percent

178C—Waukee loam, 5 to 9 percent slopes

Component Description

Waukee and similar soils

Extent: 100 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 5 to 9 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loamy alluvium over sandy and gravelly alluvium

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 7.6 inches

Content of organic matter in the upper 10 inches: 3.5 percent

179D2—Gara loam, 9 to 14 percent slopes, moderately eroded

Component Description

Gara, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Ladoga, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Armstrong, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

179D3—Gara clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Gara, severely eroded, and similar soils

Extent: 65 to 75 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Gara, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ladoga, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Armstrong, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

179E2—Gara loam, 14 to 18 percent slopes, moderately eroded

Component Description

Gara, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

Gara, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ladoga, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

179E3—Gara clay loam, 14 to 18 percent slopes, severely eroded

Component Description

Gara, severely eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Gara, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Armstrong, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ladoga, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

179F2—Gara loam, 18 to 25 percent slopes, moderately eroded***Component Description*****Gara, moderately eroded, and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components**Gara, severely eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

179F3—Gara clay loam, 18 to 25 percent slopes, severely eroded***Component Description*****Gara, severely eroded, and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Gara, moderately eroded, and similar soils**

Extent: 5 to 15 percent of the unit

180—Keomah silt loam, 0 to 2 percent slopes***Component Description*****Keomah and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Upland flats

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components**Clinton and similar soils**

Extent: 0 to 10 percent of the unit

192D2—Adair silty clay loam, 9 to 14 percent slopes, moderately eroded***Component Description*****Adair, moderately eroded, and similar soils**

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol weathered from glacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.5 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Shelby, moderately eroded, and similar soils**

Extent: 10 to 20 percent of the unit

Otley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

192D3—Adair clay loam, 9 to 14 percent slopes, severely eroded

Component Description

Adair, severely eroded, and similar soils

Extent: 65 to 75 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol weathered from glacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Adair, moderately eroded, and similar soils

Extent: 10 to 20 percent of the unit

Otley, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Shelby, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

220—Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Nodaway, occasionally flooded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 13.2 inches

Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components**Ackmore, occasionally flooded, and similar soils**

Extent: 0 to 10 percent of the unit

Colo, occasionally flooded, and similar soils

Extent: 0 to 10 percent of the unit

Lawson, occasionally flooded, and similar soils

Extent: 0 to 10 percent of the unit

279—Taintor silty clay loam, 0 to 2 percent slopes***Component Description*****Taintor and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Upland flats

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 5.3 percent

Minor Dissimilar Components**Mahaska and similar soils**

Extent: 0 to 10 percent of the unit

Sperry and similar soils

Extent: 0 to 10 percent of the unit

280—Mahaska silty clay loam, 0 to 2 percent slopes***Component Description*****Mahaska and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Upland flats ([fig. 9](#))

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.0 inches

Content of organic matter in the upper 10 inches: 4.8 percent



Figure 9.—Somewhat poorly drained areas of Mahaska silty clay loam, 0 to 2 percent slopes, are well suited to intensive row cropping.

Minor Dissimilar Components

Taintor and similar soils

Extent: 0 to 10 percent of the unit

281B—Otley silty clay loam, 2 to 5 percent slopes

Component Description

Otley and similar soils

Extent: 100 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

281C—Otley silty clay loam, 5 to 9 percent slopes***Component Description*****Otley and similar soils**

Extent: 80 to 100 percent of the unit

Landscape position: Shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 0 to 10 percent of the unit

Otley, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

**281C2—Otley silty clay loam, 5 to 9 percent slopes,
moderately eroded*****Component Description*****Otley, moderately eroded, and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 0 to 10 percent of the unit

Otley, slightly eroded, and similar soils

Extent: 0 to 10 percent of the unit

Otley, severely eroded, and similar soils*Extent:* 0 to 10 percent of the unit**281D2—Otley silty clay loam, 9 to 14 percent slopes, moderately eroded*****Component Description*****Otley, moderately eroded, and similar soils***Extent:* 75 to 85 percent of the unit*Landscape position:* Side slopes*Slope range:* 9 to 14 percent*Texture of the surface layer:* Silty clay loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Moderately well drained*Parent material:* Loess*Flooding:* None*Shallowest depth to wet zone:* 2.0 feet (April)*Deepest depth to wet zone:* 5.0 feet (September)*Ponding:* None*Available water capacity to a depth of 60 inches:* 11.6 inches*Content of organic matter in the upper 10 inches:* 2.1 percent***Minor Dissimilar Components*****Adair, moderately eroded, and similar soils***Extent:* 0 to 10 percent of the unit**Ely and similar soils***Extent:* 0 to 10 percent of the unit**Otley, slightly eroded, and similar soils***Extent:* 0 to 10 percent of the unit**Otley, severely eroded, and similar soils***Extent:* 0 to 10 percent of the unit**281D3—Otley silty clay loam, 9 to 14 percent slopes, severely eroded*****Component Description*****Otley, severely eroded, and similar soils***Extent:* 75 to 85 percent of the unit*Landscape position:* Side slopes*Slope range:* 9 to 14 percent*Texture of the surface layer:* Silty clay loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Moderately well drained*Parent material:* Loess*Flooding:* None*Shallowest depth to wet zone:* 2.0 feet (April)*Deepest depth to wet zone:* 5.0 feet (September)*Ponding:* None*Available water capacity to a depth of 60 inches:* 11.6 inches*Content of organic matter in the upper 10 inches:* 1.3 percent

Minor Dissimilar Components**Otley, moderately eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Adair, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Shelby, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

**281E2—Otley silty clay loam, 14 to 18 percent slopes,
moderately eroded*****Component Description*****Otley, moderately eroded, and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 0 to 10 percent of the unit

Otley, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Shelby, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

291—Atterberry silt loam, 0 to 2 percent slopes***Component Description*****Atterberry and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Upland flats

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Walford and similar soils

Extent: 5 to 15 percent of the unit

293C—Fayette-Chelsea-Tell complex, 5 to 9 percent slopes

Component Description

Fayette and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Chelsea and similar soils

Extent: 25 to 40 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Eolian sands

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 4.4 inches

Content of organic matter in the upper 10 inches: 0.4 percent

Tell and similar soils

Extent: 15 to 25 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches

Content of organic matter in the upper 10 inches: 1.9 percent

293D—Fayette-Chelsea-Tell complex, 9 to 14 percent slopes

Component Description

Fayette and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Chelsea and similar soils

Extent: 25 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Eolian sands

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 4.4 inches

Content of organic matter in the upper 10 inches: 0.4 percent

Tell and similar soils

Extent: 15 to 25 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches

Content of organic matter in the upper 10 inches: 1.9 percent

293D2—Fayette-Chelsea-Tell complex, 9 to 14 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.5 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Chelsea, moderately eroded, and similar soils

Extent: 25 to 40 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Eolian sands
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 4.4 inches
Content of organic matter in the upper 10 inches: 0.3 percent

Tell, moderately eroded, and similar soils

Extent: 15 to 25 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over eolian sand
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 7.3 inches
Content of organic matter in the upper 10 inches: 1.2 percent

293E—Fayette-Chelsea-Tell complex, 14 to 18 percent slopes

Component Description

Fayette and similar soils

Extent: 35 to 45 percent of the unit
Landscape position: Side slopes
Slope range: 14 to 18 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Chelsea and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Eolian sands

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 4.4 inches

Content of organic matter in the upper 10 inches: 0.4 percent

Tell and similar soils

Extent: 20 to 25 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches

Content of organic matter in the upper 10 inches: 1.9 percent

293E2—Fayette-Chelsea-Tell complex, 14 to 18 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Chelsea, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Eolian sands
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 4.4 inches
Content of organic matter in the upper 10 inches: 0.3 percent

Tell, moderately eroded, and similar soils

Extent: 20 to 25 percent of the unit
Landscape position: Side slopes
Slope range: 14 to 18 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over eolian sand
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 7.3 inches
Content of organic matter in the upper 10 inches: 1.2 percent

293G—Fayette-Chelsea-Tell complex, 18 to 40 percent slopes

Component Description

Fayette and similar soils

Extent: 35 to 45 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 40 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.7 inches
Content of organic matter in the upper 10 inches: 1.5 percent

Chelsea and similar soils

Extent: 30 to 40 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 40 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Eolian sands
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 4.4 inches
Content of organic matter in the upper 10 inches: 0.4 percent

Tell and similar soils

Extent: 20 to 25 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 40 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches

Content of organic matter in the upper 10 inches: 1.9 percent

353B—Tell silt loam, 2 to 5 percent slopes***Component Description*****Tell and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches

Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components**Fayette and similar soils**

Extent: 5 to 15 percent of the unit

Chelsea and similar soils

Extent: 0 to 10 percent of the unit

353C—Tell silt loam, 5 to 9 percent slopes***Component Description*****Tell and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over eolian sand

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.1 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Fayette and similar soils

Extent: 5 to 15 percent of the unit

353C2—Tell silt loam, 5 to 9 percent slopes, moderately eroded

Component Description

Tell, moderately eroded, and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Ridgetops and shoulders
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over eolian sand
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 7.3 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

353D2—Tell silt loam, 9 to 14 percent slopes, moderately eroded

Component Description

Tell, moderately eroded, and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over eolian sand
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 7.3 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

377B—Dinsdale silty clay loam, 2 to 5 percent slopes***Component Description*****Dinsdale and similar soils**

Extent: 100 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 4.0 percent

377C—Dinsdale silty clay loam, 5 to 9 percent slopes***Component Description*****Dinsdale and similar soils**

Extent: 80 to 90 percent of the unit

Landscape position: Shoulders and side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess over subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 4.0 percent

Minor Dissimilar Components**Pillot and similar soils**

Extent: 5 to 15 percent of the unit

Kenyon and similar soils

Extent: 0 to 10 percent of the unit

420—Tama silty clay loam, terrace, 0 to 2 percent slopes***Component Description*****Tama, terrace, and similar soils**

Extent: 100 percent of the unit

Landscape position: Treads on steam terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.1 inches
Content of organic matter in the upper 10 inches: 3.5 percent

420B—Tama silty clay loam, terrace, 2 to 5 percent slopes

Component Description

Tama, terrace, and similar soils

Extent: 100 percent of the unit
Landscape position: Treads and risers on stream terraces
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.1 inches
Content of organic matter in the upper 10 inches: 3.5 percent

422—Amana silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Amana, occasionally flooded, and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (April)
Deepest depth to wet zone: 4.0 feet (September)
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Nodaway, occasionally flooded, and similar soils

Extent: 5 to 15 percent of the unit

424D2—Lindley-Keswick complex, 9 to 14 percent slopes, moderately eroded

Component Description

Lindley, moderately eroded, and similar soils

Extent: 45 to 55 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.3 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Keswick, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 8.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Clinton, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

424E2—Lindley-Keswick complex, 14 to 18 percent slopes, moderately eroded

Component Description

Lindley, moderately eroded, and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes ([fig. 10](#))

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)



Figure 10.—A constructed pond surrounded by pasture in an area of Lindley-Keswick complex, 14 to 18 percent slopes, moderately eroded.

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.3 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Keswick, moderately eroded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 8.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Ely and similar soils

Extent: 0 to 10 percent of the unit

Keswick, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 0 to 15 percent of the unit

424E3—Lindley-Keswick complex, 14 to 18 percent slopes, severely eroded***Component Description*****Lindley, severely eroded, and similar soils**

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.1 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Keswick, severely eroded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 8.8 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Clinton, severely eroded, and similar soils**

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

424F2—Lindley-Keswick complex, 18 to 25 percent slopes, moderately eroded***Component Description*****Lindley, moderately eroded, and similar soils**

Extent: 60 to 70 percent of the unit

Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.3 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Keswick, moderately eroded, and similar soils

Extent: 20 to 30 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Red paleosol and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 1.0 foot (April, October)
Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)
Ponding: None
Available water capacity to a depth of 60 inches: 8.7 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

425D2—Keswick silty clay loam, 9 to 14 percent slopes, moderately eroded

Component Description

Keswick, moderately eroded, and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Red paleosol and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 1.0 foot (April, October)
Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)
Ponding: None
Available water capacity to a depth of 60 inches: 8.7 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Lindley, moderately eroded, and similar soils**

Extent: 5 to 15 percent of the unit

**425D3—Keswick clay loam, 9 to 14 percent slopes,
severely eroded*****Component Description*****Keswick, severely eroded, and similar soils**

Extent: 55 to 65 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 8.8 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components**Keswick, moderately eroded, and similar soils**

Extent: 10 to 20 percent of the unit

Clinton, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Lindley, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

428B—Ely silty clay loam, 2 to 5 percent slopes***Component Description*****Ely and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Footslopes and alluvial fans

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty colluvium

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.3 inches

Content of organic matter in the upper 10 inches: 5.0 percent

Minor Dissimilar Components

Colo and similar soils

Extent: 0 to 10 percent of the unit

430—Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Ackmore, occasionally flooded, and similar soils

Extent: 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.0 percent

450—Pillot silt loam, 0 to 2 percent slopes

Component Description

Pillot and similar soils

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over sandy deposits

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.2 inches

Content of organic matter in the upper 10 inches: 3.3 percent

450B—Pillot silt loam, 2 to 5 percent slopes

Component Description

Pillot and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Summits on uplands; risers on stream terraces

Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over sandy deposits
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.2 inches
Content of organic matter in the upper 10 inches: 3.3 percent

Minor Dissimilar Components

Tama and similar soils

Extent: 5 to 15 percent of the unit

450C—Pilot silt loam, 5 to 9 percent slopes

Component Description

Pilot and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Shoulders and side slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over sandy deposits
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.2 inches
Content of organic matter in the upper 10 inches: 3.3 percent

Minor Dissimilar Components

Tama and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

453—Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Tuskeego, rarely flooded, and similar soils

Extent: 70 to 80 percent of the unit
Landscape position: Treads on stream terraces
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Bremer, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

Vesser, occasionally flooded, and similar soils

Extent: 5 to 15 percent of the unit

Nevin, rarely flooded, and similar soils

Extent: 0 to 10 percent of the unit

462B—Downs silt loam, terrace, 2 to 5 percent slopes

Component Description

Downs, terrace, and similar soils

Extent: 85 to 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components

Tama, terrace, and similar soils

Extent: 5 to 15 percent of the unit

463B—Fayette silt loam, terrace, 2 to 5 percent slopes

Component Description

Fayette, terrace, and similar soils

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 1.5 percent

463C2—Fayette silt loam, terrace, 5 to 9 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, terrace, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, slightly eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

463D2—Fayette silt loam, terrace, 9 to 14 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, terrace, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, severely eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

463D3—Fayette silty clay loam, terrace, 9 to 14 percent slopes, severely eroded

Component Description

Fayette, severely eroded, terrace, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Fayette, moderately eroded, terrace, and similar soils

Extent: 15 to 25 percent of the unit

463E2—Fayette silt loam, terrace, 14 to 18 percent slopes, moderately eroded

Component Description

Fayette, moderately eroded, terrace, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, severely eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

463E3—Fayette silty clay loam, terrace, 14 to 18 percent slopes, severely eroded

Component Description

Fayette, severely eroded, terrace, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Risers on stream terraces
Slope range: 14 to 18 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.5 inches
Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Fayette, moderately eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

**463F2—Fayette silt loam, terrace, 18 to 25 percent slopes,
moderately eroded**

Component Description

Fayette, moderately eroded, terrace, and similar soils

Extent: 80 to 90 percent of the unit
Landscape position: Risers on stream terraces
Slope range: 18 to 25 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.5 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Fayette, severely eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

Fayette, slightly eroded, terrace, and similar soils

Extent: 0 to 10 percent of the unit

**463F3—Fayette silty clay loam, terrace, 18 to 25 percent
slopes, severely eroded**

Component Description

Fayette, severely eroded, terrace, and similar soils

Extent: 85 to 95 percent of the unit
Landscape position: Risers on stream terraces
Slope range: 18 to 25 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Fayette, moderately eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

484—Lawson silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Lawson, occasionally flooded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July,
August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 10.1 inches

Content of organic matter in the upper 10 inches: 5.0 percent

Minor Dissimilar Components

Ackmore, occasionally flooded, and similar soils

Extent: 5 to 15 percent of the unit

Amana, occasionally flooded, and similar soils

Extent: 5 to 15 percent of the unit

587—Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Chequest, occasionally flooded, and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Flood plains ([fig. 11](#))

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December



Figure 11.—A constructed wetland west of Middle Amana in an area of Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded. Wetlands enhance wildlife habitat, improve water quality, and provide recreational opportunities.

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Amana, occasionally flooded, and similar soils

Extent: 0 to 10 percent of the unit

587+—Chequest silt loam, 0 to 2 percent slopes, occasionally flooded, overwash

Component Description

Chequest, occasionally flooded, overwash, and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 10.8 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Chequest, occasionally flooded, and similar soils

Extent: 0 to 10 percent of the unit

626—Hayfield silt loam, 0 to 2 percent slopes

Component Description

Hayfield and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Upland flats; treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loamy sediments over sandy and gravelly outwash

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 7.0 inches

Content of organic matter in the upper 10 inches: 2.9 percent

Minor Dissimilar Components

Udolpho and similar soils

Extent: 5 to 15 percent of the unit

663D2—Seaton silt loam, 9 to 14 percent slopes, moderately eroded

Component Description

Seaton, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Timula, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Seaton soils that are only slightly eroded

Extent: 0 to 10 percent of the unit

**663E2—Seaton silt loam, 14 to 18 percent slopes,
moderately eroded**

Component Description

Seaton, moderately eroded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Timula, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Seaton, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

**663E3—Seaton silt loam, 14 to 18 percent slopes,
severely eroded**

Component Description

Seaton, severely eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.7 inches

Content of organic matter in the upper 10 inches: 1.1 percent

Minor Dissimilar Components

Seaton, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Timula, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

663F2—Seaton silt loam, 18 to 25 percent slopes, moderately eroded

Component Description

Seaton, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Side slopes

Slope range: 18 to 25 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Seaton soils that are only slightly eroded

Extent: 5 to 15 percent of the unit

Timula, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

687—Watkins silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Watkins, rarely flooded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.1 inches

Content of organic matter in the upper 10 inches: 2.7 percent

Minor Dissimilar Components**Koszta, rarely flooded, and similar soils**

Extent: 5 to 15 percent of the unit

687B—Watkins silt loam, 2 to 5 percent slopes, rarely flooded***Component Description*****Watkins, rarely flooded, and similar soils**

Extent: 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.1 inches

Content of organic matter in the upper 10 inches: 2.7 percent

688—Koszta silt loam, 0 to 2 percent slopes, rarely flooded***Component Description*****Koszta, rarely flooded, and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 10.8 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components**Watkins, rarely flooded, and similar soils**

Extent: 0 to 10 percent of the unit

771B—Waubeeek silt loam, 2 to 5 percent slopes***Component Description*****Waubeeek and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.5 inches

Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components**Atterberry and similar soils**

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

**771C2—Waubeeek silt loam, 5 to 9 percent slopes,
moderately eroded*****Component Description*****Waubeeek, moderately eroded, and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Shoulders and side slopes

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.2 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 0 to 10 percent of the unit

Waubeeek soils that are only slightly eroded

Extent: 0 to 10 percent of the unit

792D2—Armstrong silty clay loam, 9 to 14 percent slopes, moderately eroded

Component Description

Armstrong, moderately eroded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Side slopes

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Gara, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Armstrong, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Ladoga, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

876B—Ladoga silt loam, terrace, 2 to 5 percent slopes

Component Description

Ladoga, terrace, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Givin, terrace, and similar soils

Extent: 5 to 15 percent of the unit

876C—Ladoga silt loam, terrace, 5 to 9 percent slopes

Component Description

Ladoga, terrace, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ladoga, moderately eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

Otley, terrace, and similar soils

Extent: 5 to 15 percent of the unit

876C2—Ladoga silt loam, terrace, 5 to 9 percent slopes, moderately eroded

Component Description

Ladoga, moderately eroded, terrace, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ladoga, slightly eroded, terrace, and similar soils

Extent: 5 to 15 percent of the unit

Otley, moderately eroded, terrace, and similar soils

Extent: 0 to 10 percent of the unit

876D2—Ladoga silt loam, terrace, 9 to 14 percent slopes, moderately eroded***Component Description*****Ladoga, moderately eroded, terrace, and similar soils**

Extent: 85 to 95 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 9 to 14 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components**Ely and similar soils**

Extent: 5 to 15 percent of the unit

881B—Otley silty clay loam, terrace, 2 to 5 percent slopes***Component Description*****Otley, terrace, and similar soils**

Extent: 90 to 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 2.0 feet (April)

Deepest depth to wet zone: 5.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components**Mahaska, terrace, and similar soils**

Extent: 0 to 10 percent of the unit

911B—Colo-Ely complex, 2 to 5 percent slopes

Component Description

Colo and similar soils

Extent: 50 to 60 percent of the unit

Landscape position: Upland drainageways ([fig. 12](#))

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Silty alluvium

Flooding: None

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.6 inches

Content of organic matter in the upper 10 inches: 5.5 percent

Ely and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Footslopes of upland drainageways ([fig. 12](#))

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty colluvium

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.3 inches

Content of organic matter in the upper 10 inches: 5.0 percent

Minor Dissimilar Components

Colo, frequently flooded, and similar soils

Extent: 0 to 10 percent of the unit

Judson and similar soils

Extent: 0 to 10 percent of the unit

993D2—Gara-Armstrong complex, 9 to 14 percent slopes, moderately eroded

Component Description

Gara, moderately eroded, and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes ([fig. 13](#))

Slope range: 9 to 14 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None



Figure 12.—Drop structures, grassed waterways, and contour farming help to prevent further erosion in an area of Colo-Ely complex, 2 to 5 percent slopes.

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Armstrong, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes (fig. 13)

Slope range: 9 to 14 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Red paleosol and the underlying subglacial till

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April, October)

Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)

Ponding: None

Available water capacity to a depth of 60 inches: 9.6 inches

Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ladoga, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit



Figure 13.—Growing hay in this area of Gara-Armstrong complex, 9 to 14 percent slopes, moderately eroded, helps to control erosion by providing a protective cover of vegetation. It also provides nitrogen to the soil and improves tilth for the next growing season.

Gara, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

993E2—Gara-Armstrong complex, 14 to 18 percent slopes, moderately eroded

Component Description

Gara, moderately eroded, and similar soils

Extent: 40 to 50 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Subglacial till

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 10.2 inches

Content of organic matter in the upper 10 inches: 2.0 percent

Armstrong, moderately eroded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Red paleosol and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 1.0 foot (April, October)
Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Armstrong, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

Ely and similar soils

Extent: 0 to 10 percent of the unit

Gara, severely eroded, and similar soils

Extent: 0 to 10 percent of the unit

993F2—Gara-Armstrong complex, 18 to 25 percent slopes, moderately eroded

Component Description

Gara, moderately eroded, and similar soils

Extent: 60 to 70 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Subglacial till
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 10.2 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Armstrong, moderately eroded, and similar soils

Extent: 20 to 30 percent of the unit
Landscape position: Side slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Red paleosol and the underlying subglacial till
Flooding: None
Shallowest depth to wet zone: 1.0 foot (April, October)
Deepest depth to wet zone: More than 6.7 feet (January, February, July, August, September)
Ponding: None

Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Gara, severely eroded, and similar soils

Extent: 5 to 15 percent of the unit

1160—Walford silt loam, terrace, 0 to 2 percent slopes

Component Description

Walford, terrace, and similar soils

Extent: 90 to 100 percent of the unit
Landscape position: Treads on stream terraces
Slope range: 0 to 1 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Loess
Flooding: None
Shallowest depth to wet zone: At the surface (April)
Deepest depth to wet zone: 3.0 feet (September)
Ponding: None
Available water capacity to a depth of 60 inches: 11.9 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components

Atterberry, terrace, and similar soils

Extent: 0 to 10 percent of the unit

**1220—Nodaway silt loam, 0 to 2 percent slopes,
channeled, frequently flooded**

Component Description

Nodaway, frequently flooded, channeled, and similar soils

Extent: 70 to 80 percent of the unit
Landscape position: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 4.0 feet (April)
Deepest depth to wet zone: 6.5 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Amana, frequently flooded, channeled, and similar soils

Extent: 5 to 15 percent of the unit

Aquents, frequently flooded, channeled, ponded, and similar soils

Extent: 0 to 10 percent of the unit

Colo, frequently flooded, channeled, and similar soils

Extent: 0 to 10 percent of the unit

Klum, frequently flooded, channeled, and similar soils

Extent: 0 to 10 percent of the unit

1291—Atterberry silt loam, terrace, 0 to 2 percent slopes

Component Description

Atterberry, terrace, and similar soils

Extent: 90 to 100 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Loess

Flooding: None

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Downs, terrace, and similar soils

Extent: 0 to 10 percent of the unit

1354—Aquents, ponded

Component Description

Aquents, ponded, and similar soils

Extent: 100 percent of the unit

Landscape position: Flood plains ([fig. 14](#))

Slope range: 0 to 1 percent

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Very poorly drained

Parent material: Alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Months in which ponding does not occur: January, December

Deepest ponding: 0.5 foot (February, March, April, May, June, July, August, September, October, November)



Figure 14.—An area of Aqueuts, ponded, along the Iowa River.

1442B—Tama-Sparta-Pilot complex, 2 to 5 percent slopes

Component Description

Tama and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Sparta and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Sandy outwash deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.2 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Pillot and similar soils

Extent: 15 to 25 percent of the unit

Landscape position: Ridgetops

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over sandy deposits

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 9.2 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Dickinson and similar soils

Extent: 0 to 10 percent of the unit

1442C—Tama-Sparta-Pillot complex, 5 to 9 percent slopes

Component Description

Tama and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 12.1 inches

Content of organic matter in the upper 10 inches: 3.5 percent

Sparta and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Ridgetops and shoulders

Slope range: 5 to 9 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Sandy outwash deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.2 inches

Content of organic matter in the upper 10 inches: 1.5 percent

Pillot and similar soils*Extent:* 15 to 25 percent of the unit*Landscape position:* Ridgetops and shoulders*Slope range:* 5 to 9 percent*Texture of the surface layer:* Silt loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Well drained*Parent material:* Loess over sandy deposits*Flooding:* None*Depth to wet zone:* More than 6.7 feet all year*Ponding:* None*Available water capacity to a depth of 60 inches:* 9.2 inches*Content of organic matter in the upper 10 inches:* 3.5 percent***Minor Dissimilar Components*****Dickinson and similar soils***Extent:* 0 to 10 percent of the unit**1442C2—Tama-Sparta-Pillot complex, 5 to 9 percent slopes, moderately eroded*****Component Description*****Tama, moderately eroded, and similar soils***Extent:* 35 to 45 percent of the unit*Landscape position:* Ridgetops and shoulders*Slope range:* 5 to 9 percent*Texture of the surface layer:* Silty clay loam*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Well drained*Parent material:* Loess*Flooding:* None*Depth to wet zone:* More than 6.7 feet all year*Ponding:* None*Available water capacity to a depth of 60 inches:* 11.7 inches*Content of organic matter in the upper 10 inches:* 2.3 percent**Sparta, moderately eroded, and similar soils***Extent:* 30 to 40 percent of the unit*Landscape position:* Ridgetops and shoulders*Slope range:* 5 to 9 percent*Texture of the surface layer:* Loamy fine sand*Depth to restrictive feature:* Very deep (more than 60 inches)*Drainage class:* Excessively drained*Parent material:* Sandy outwash deposits reworked by wind*Flooding:* None*Depth to wet zone:* More than 6.7 feet all year*Ponding:* None*Available water capacity to a depth of 60 inches:* 5.0 inches*Content of organic matter in the upper 10 inches:* 1.3 percent**Pillot, moderately eroded, and similar soils***Extent:* 15 to 25 percent of the unit*Landscape position:* Ridgetops and shoulders*Slope range:* 5 to 9 percent

Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over sandy deposits
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 8.4 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Dickinson, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

1442D2—Tama-Sparta-Pilot complex, 9 to 14 percent slopes, moderately eroded

Component Description

Tama, moderately eroded, and similar soils

Extent: 35 to 45 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 11.7 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Sparta, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash deposits reworked by wind
Flooding: None
Depth to wet zone: More than 6.7 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 5.0 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Pilot, moderately eroded, and similar soils

Extent: 15 to 25 percent of the unit
Landscape position: Side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive feature: Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess over sandy deposits

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.4 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Dickinson, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

1442E2—Tama-Sparta-Pilot complex, 14 to 18 percent slopes, moderately eroded

Component Description

Tama, moderately eroded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 11.7 inches

Content of organic matter in the upper 10 inches: 2.3 percent

Sparta, moderately eroded, and similar soils

Extent: 30 to 40 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Loamy fine sand

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Excessively drained

Parent material: Sandy outwash deposits reworked by wind

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 5.0 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Pilot, moderately eroded, and similar soils

Extent: 15 to 25 percent of the unit

Landscape position: Side slopes

Slope range: 14 to 18 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Well drained

Parent material: Loess over sandy deposits

Flooding: None

Depth to wet zone: More than 6.7 feet all year

Ponding: None

Available water capacity to a depth of 60 inches: 8.4 inches
Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Dickinson, moderately eroded, and similar soils

Extent: 0 to 10 percent of the unit

1540—Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded (fig. 15)

Component Description

Quiver, frequently flooded, and similar soils

Extent: 35 to 45 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Very poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.8 inches

Content of organic matter in the upper 10 inches: 1.9 percent

Zook, frequently flooded, and similar soils

Extent: 25 to 35 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silty clay loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Poorly drained

Parent material: Clayey alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: At the surface (April)

Deepest depth to wet zone: 3.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 11.4 inches

Content of organic matter in the upper 10 inches: 6.0 percent

Klum, frequently flooded, and similar soils

Extent: 10 to 20 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Fine sandy loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Sandy alluvium



Figure 15.—Flooding in an area of Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded, along the Iowa River.

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 9.7 inches

Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Aquents, frequently flooded, ponded, and similar soils

Extent: 5 to 15 percent of the unit

Nodaway, frequently flooded, and similar soils

Extent: 0 to 10 percent of the unit

2219—Ella silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Ella, rarely flooded, and similar soils

Extent: 65 to 75 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components

Jackson, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

Kosztka, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

Tell, rarely flooded, and similar soils

Extent: 0 to 10 percent of the unit

Wiota, rarely flooded, and similar soils

Extent: 0 to 10 percent of the unit

2219B—Ella silt loam, 2 to 5 percent slopes, rarely flooded

Component Description

Ella, rarely flooded, and similar soils

Extent: 70 to 80 percent of the unit

Landscape position: Treads on stream terraces

Slope range: 2 to 5 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.9 inches

Content of organic matter in the upper 10 inches: 2.2 percent

Minor Dissimilar Components

Jackson, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

Tell, rarely flooded, and similar soils

Extent: 5 to 15 percent of the unit

Wiota, rarely flooded, and similar soils

Extent: 0 to 10 percent of the unit

2219C2—Ella silt loam, 5 to 9 percent slopes, moderately eroded, rarely flooded

Component Description

Ella, moderately eroded, and similar soils

Extent: 75 to 85 percent of the unit

Landscape position: Risers on stream terraces

Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 11.4 inches

Content of organic matter in the upper 10 inches: 1.3 percent

Minor Dissimilar Components

Jackson, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

Tell, moderately eroded, and similar soils

Extent: 5 to 15 percent of the unit

2422—Amana-Nodaway-Lawson complex, 0 to 2 percent slopes, occasionally flooded

Component Description

Amana, occasionally flooded, and similar soils

Extent: 45 to 55 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.9 inches

Content of organic matter in the upper 10 inches: 3.0 percent

Nodaway, occasionally flooded, and similar soils

Extent: 25 to 35 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 13.2 inches

Content of organic matter in the upper 10 inches: 1.9 percent

Lawson, occasionally flooded, and similar soils

Extent: 15 to 25 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 10.1 inches

Content of organic matter in the upper 10 inches: 5.0 percent

4946—Udorthents-Interstate highway complex, 0 to 5 percent slopes

Component Description

Udorthents and similar soils

Extent: 60 to 70 percent of the unit

Slope range: 0 to 5 percent

Depth to restrictive feature: Very deep (more than 60 inches)

Parent material: Loamy deposits

Flooding: None

Ponding: None

Interstate highway

Extent: 25 to 35 percent of the unit

Slope range: 0 to 5 percent

Flooding: None

Ponding: None

Minor Dissimilar Components

Aquents, ponded, and similar soils

Extent: 0 to 10 percent of the unit

5010—Pits, sand and gravel

Component Description

Pits, sand and gravel

Definition: This map unit consists of areas from which sand and gravel have been removed.

Extent: 100 percent of the unit

Ponding: None

5040—Udorthents, loamy

Component Description

Udorthents and similar soils

Extent: 100 percent of the unit

Texture of the surface layer: Variable

Parent material: Loamy deposits

Flooding: None

Ponding: None

6220—Nodaway silt loam, 0 to 2 percent slopes, frequently flooded

Component Description

Nodaway, frequently flooded, and similar soils

Extent: 80 to 90 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Moderately well drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 4.0 feet (April)

Deepest depth to wet zone: 6.5 feet (August, September, October)

Ponding: None

Available water capacity to a depth of 60 inches: 13.2 inches

Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Klum, frequently flooded, and similar soils

Extent: 5 to 15 percent of the unit

Aquents, frequently flooded, ponded, and similar soils

Extent: 0 to 10 percent of the unit

6422—Amana silt loam, 0 to 2 percent slopes, frequently flooded

Component Description

Amana, frequently flooded, and similar soils

Extent: 85 to 95 percent of the unit

Landscape position: Flood plains

Slope range: 0 to 2 percent

Texture of the surface layer: Silt loam

Depth to restrictive feature: Very deep (more than 60 inches)

Drainage class: Somewhat poorly drained

Parent material: Silty alluvium

Months in which flooding does not occur: January, December

Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)

Shallowest depth to wet zone: 1.0 foot (April)

Deepest depth to wet zone: 4.0 feet (September)

Ponding: None

Available water capacity to a depth of 60 inches: 12.9 inches

Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Nodaway, frequently flooded, and similar soils

Extent: 5 to 15 percent of the unit

AW—Animal waste lagoon

- This map unit consists of shallow ponds constructed to hold animal waste from farm feedlots.

SL—Sewage lagoon

- This map unit consists of shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid waste.

W—Water

- This map unit consists of natural bodies of water.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udoll (*Ud*, meaning humid, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludolls (*Hapl*, meaning minimal horizonation, plus *udoll*, the suborder of the Mollisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, superactive, mesic Typic Hapludolls.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

The table "Classification of the Soils" in Part II of this publication indicates the order, suborder, great group, subgroup, and family of the soil series in the survey area.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2003). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Ackmore Series

Typical Pedon

Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 370 feet south and 2,560 feet west of the northeast corner of sec. 8, T. 79 N., R. 10 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 40 minutes 21.6 seconds N. and long. 92 degrees 02 minutes 10.3 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; friable; common fine and medium roots throughout; common very fine constricted tubular pores; slightly acid; abrupt smooth boundary.
- C1—8 to 19 inches; stratified very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; common very fine and fine roots throughout; common very fine tubular pores; neutral; clear smooth boundary.
- C2—19 to 31 inches; stratified very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; few very fine roots throughout; common very fine tubular pores; common fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.
- Ab1—31 to 44 inches; black (10YR 2/1) silt loam; moderate fine and medium granular structure; friable; few fine roots throughout; common very fine tubular pores; slightly acid; gradual smooth boundary.
- Ab2—44 to 59 inches; black (10YR 2/1) silty clay loam; moderate fine granular structure; friable; few fine roots throughout; common very fine tubular pores; slightly acid; gradual smooth boundary.
- Ab3—59 to 66 inches; very dark gray (10YR 3/1) and dark grayish brown (10YR 4/2) silty clay loam; weak fine and medium subangular blocky structure; friable; common very fine tubular pores; slightly acid; clear smooth boundary.
- Cg—66 to 80 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; common very fine tubular pores; common medium prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Depth to buried soil: 20 to 36 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

C horizon:

Hue—10YR
Value—2 to 5
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

Ab horizon:

Hue—10YR
Value—2 to 4
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

Cg horizon:

Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

Adair Series

Typical Pedon

Adair silty clay loam, 9 to 14 percent slopes, moderately eroded, in a CRP field; in Iowa County, Iowa; 600 feet east and 2,520 feet south of the northwest corner of sec. 27, T. 78 N., R. 12 W.; USGS Millersburg topographic quadrangle; lat. 41 degrees 31 minutes 55.6 seconds N. and long. 92 degrees 14 minutes 13.6 seconds W., NAD 83:

- Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many fine and medium roots; common very fine tubular pores; slightly acid; clear smooth boundary.
- A—6 to 9 inches; about 80 percent very dark grayish brown (10YR 3/2) silty clay loam and 20 percent brown (10YR 4/3) mixings; grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; many fine roots; common very fine tubular pores; slightly acid; clear smooth boundary.
- 2Bt1—9 to 15 inches; brown (7.5YR 4/4) clay; moderate fine subangular blocky structure; firm; common very fine roots; common very fine tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
- 2Bt2—15 to 24 inches; brown (7.5YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; clear smooth boundary.
- 2Bt3—24 to 36 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; few very fine tubular pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; common medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; moderately acid; clear smooth boundary.

- 2Bt4—36 to 50 inches; strong brown (7.5YR 5/6) clay loam; weak medium prismatic structure parting to weak and moderate medium subangular blocky; firm; few very fine roots; few very fine tubular pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; many medium prominent gray (2.5Y 5/1) redoximorphic depletions; slightly acid; clear smooth boundary.
- 2BC—50 to 59 inches; strong brown (7.5YR 5/6) clay loam; weak fine and medium prismatic structure; firm; few distinct brown (7.5YR 4/4) clay films on faces of peds; common medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; slightly acid; gradual smooth boundary.
- 2C—59 to 80 inches; brown (10YR 5/4) clay loam; massive; firm; common medium prominent gray (2.5Y 5/1) redoximorphic depletions; slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 40 to 60 inches

Other features: Some pedons have a BA horizon as much as 5 inches thick. A stone line may be at the top of the 2Bt horizon or at the base of the A or BA horizon.

Ap or A horizon:

Hue—7.5YR or 10YR

Value—2 or 3

Chroma—1 or 2

Texture—clay loam, loam, silty clay loam, or silt loam

Reaction—slightly acid or moderately acid

2Bt horizon (upper part):

Hue—5YR, 7.5YR, or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—clay loam, clay, or (less commonly) silty clay

Reaction—moderately acid or slightly acid

2Bt horizon (lower part):

Hue—5YR, 7.5YR, or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—clay loam

Reaction—moderately acid or slightly acid

2BC horizon:

Hue—2.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—clay loam

Reaction—slightly acid to slightly alkaline

2C horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 6

Texture—clay loam

Reaction—slightly acid to slightly alkaline

Taxadjunct features: The representative pedons for the moderately eroded and severely eroded phases of the Adair series in this survey area (map units 24C2, 24D2, 24D3, 93D2, 93D3, 93E2, 192D2, 192D3, 281D2, and 281D3) are taxadjuncts because the surface layer does not meet the thickness requirements

for Mollisols. These pedons are classified as fine, smectitic, mesic Aquertic Hapludalfs.

Amana Series

Typical Pedon

Amana silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 2,500 feet north and 1,200 feet west of the southeast corner of sec. 25, T. 81 N., R. 10 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 47 minutes 07 seconds N. and long. 91 degrees 57 minutes 01 second W., NAD 83:

- Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, very dark grayish brown (10YR 3/2) dry; weak fine subangular blocky structure; friable; common fine roots; common fine tubular pores; neutral; gradual smooth boundary.
- A—8 to 16 inches; very dark brown (10YR 2/2) silt loam, very dark grayish brown (10YR 3/2) dry; weak fine subangular blocky structure; friable; common very fine roots; common fine tubular pores; neutral; gradual smooth boundary.
- Bg1—16 to 24 inches; dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; friable; few very fine roots; few very fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.
- Bg2—24 to 48 inches; dark grayish brown (10YR 4/2) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; few fine tubular pores; few fine irregular masses of iron-manganese; common fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; common fine faint light brownish gray (10YR 6/2) redoximorphic depletions; slightly acid; gradual smooth boundary.
- BCg—48 to 63 inches; grayish brown (10YR 5/2) silty clay loam; weak fine subangular blocky structure; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—63 to 80 inches; light grayish brown (10YR 6/2) silt loam; massive; friable; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Reaction—moderately acid to neutral

Bg horizon:

Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

BCg or Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6
 Chroma—1 to 4
 Texture—silt loam or loam
 Reaction—moderately acid to neutral

Armstrong Series

Typical Pedon

Armstrong silty clay loam, 9 to 14 percent slopes, moderately eroded, in a cultivated field; in Iowa County, Iowa; 1,120 feet north and 1,470 feet east of the southwest corner of sec. 18, T. 78 N., R. 11 W.; USGS Millersburg topographic quadrangle; lat. 41 degrees 33 minutes 24.1 seconds N. and long. 91 degrees 10 minutes 40.1 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; many fine roots throughout; few fine tubular pores; few distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; abrupt smooth boundary.
- BE—8 to 16 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium subangular blocky structure; friable; many fine roots throughout; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; clear smooth boundary.
- Bt1—16 to 23 inches; brown (7.5YR 4/4) clay loam; moderate fine subangular blocky structure; firm; many fine roots throughout; few fine tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds; about 2 percent rounded gravel; slightly acid; clear smooth boundary.
- 2Bt2—23 to 37 inches; brown (7.5YR 4/4) clay; moderate medium subangular blocky structure; firm; many very fine roots throughout; few fine tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds; many fine distinct yellowish red (5YR 4/6) redoximorphic concentrations; about 10 percent angular gravel; strongly acid; clear smooth boundary.
- 2Bt3—37 to 51 inches; brown (7.5YR 5/4) and strong brown (7.5YR 5/6) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine roots throughout; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; about 12 percent angular gravel; strongly acid; gradual smooth boundary.
- 2Bt4—51 to 63 inches; strong brown (7.5YR 5/6) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots throughout; few fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many black (10YR 2/1) iron and manganese oxides; common fine distinct yellowish brown (10YR 5/8) redoximorphic concentrations; common fine prominent light brownish gray (10YR 6/2) redoximorphic depletions; about 8 percent angular and rounded gravel; strongly acid; gradual smooth boundary.
- 2BC—63 to 72 inches; yellowish brown (10YR 5/6 and 5/4) clay loam; weak medium prismatic structure; firm; few distinct grayish brown (10YR 5/2) clay films on faces of peds; many black (10YR 2/1) iron and manganese oxides; common fine distinct yellowish brown (10YR 5/8) redoximorphic concentrations; common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; about 5 percent angular gravel; moderately acid; gradual smooth boundary.

2C—72 to 80 inches; yellowish brown (10YR 5/4) and pale brown (10YR 6/3) clay loam; massive; firm; many black (10YR 2/1) iron and manganese oxides; common fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; about 5 percent angular gravel; moderately acid.

Range in Characteristics

Depth to carbonates: More than 40 inches

Other features: Some pedons have an EB horizon.

Ap or A horizon:

Hue—10YR

Value—3

Chroma—1 or 2

Texture—loam, clay loam, silty clay loam, or silt loam

Reaction—moderately acid to neutral

E horizon (if it occurs):

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—loam or silt loam

Reaction—moderately acid to neutral

BE horizon (if it occurs):

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture—loam or clay loam

Reaction—moderately acid to neutral

Bt horizon (if it occurs):

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 6

Texture—loam or clay loam

Content of rock fragments—1 to 10 percent; a stone line commonly occurs at the lower boundary of this horizon

Reaction—moderately acid to neutral

2Bt horizon:

Hue—5YR or 7.5YR

Value—4 or 5

Chroma—2 to 6

Texture—clay loam or clay

Content of rock fragments—2 to 15 percent

Reaction—very strongly acid to slightly acid

2BC or 2C horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—3 to 6

Texture—clay loam

Content of rock fragments—2 to 15 percent

Reaction—moderately acid to slightly alkaline

Atterberry Series

Typical Pedon

Atterberry silt loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 530 feet east and 80 feet north of the southwest corner of sec. 5, T. 80 N., R. 12 W.; USGS Hartwick topographic quadrangle; lat. 41 degrees 22 minutes 39 seconds N. and long. 92 degrees 16 minutes 36 seconds W., NAD 83:

- Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.
- E—9 to 14 inches; dark gray (10YR 4/1) silt loam, light gray (10YR 6/1) dry; weak thin platy structure parting to weak fine granular; friable; few fine roots; few fine tubular pores; few fine faint grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; clear smooth boundary.
- BE—14 to 17 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine irregular masses of iron-manganese; few fine faint brown (10YR 5/3) redoximorphic concentrations; moderately acid; clear smooth boundary.
- Btg1—17 to 22 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; few fine faint yellowish brown (10YR 5/4) redoximorphic concentrations; moderately acid; clear smooth boundary.
- Btg2—22 to 34 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg3—34 to 48 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; few fine roots; few fine tubular pores; common faint grayish brown (10YR 5/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- BCg—48 to 54 inches; olive gray (5Y 5/2) silty clay loam; weak medium and coarse prismatic structure; friable; few fine roots; few fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg1—54 to 64 inches; light olive gray (5Y 6/2) silt loam; massive; friable; few fine roots; few fine tubular pores; few fine irregular masses of iron-manganese; many medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg2—64 to 80 inches; olive gray (5Y 5/2) silt loam; massive; friable; few fine irregular masses of iron-manganese; many medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 45 inches

Ap horizon:

Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Reaction—moderately acid to neutral

E horizon:

Hue—10YR
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Reaction—strongly acid to neutral

BE horizon (if it occurs):

Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam or silty clay loam
Reaction—strongly acid to neutral

Btg horizon:

Hue—10YR to 5Y
Value—4 or 5
Chroma—2
Texture—silty clay loam
Reaction—strongly acid to neutral

BCg horizon:

Hue—2.5Y or 5Y
Value—4 to 6
Chroma—2
Texture—silt loam or silty clay loam
Reaction—moderately acid to slightly alkaline

Cg horizon:

Hue—2.5Y or 5Y
Value—4 to 6
Chroma—2
Texture—silt loam
Reaction—slightly acid to slightly alkaline

Bassett Series***Typical Pedon***

Bassett loam, 5 to 9 percent slopes, moderately eroded, in a cultivated field; in Iowa County, Iowa; 370 feet east and 695 feet south of the northwest corner of sec. 11, T. 81 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 50 minutes 48.2 seconds N. and long. 91 degrees 52 minutes 12.4 seconds W., NAD 83:

Ap—0 to 9 inches; very dark brown (10YR 3/2) loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; common fine roots; common fine tubular pores; neutral; abrupt smooth boundary.

BE—9 to 12 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; common fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

2Bt1—12 to 16 inches; dark yellowish brown (10YR 4/4) clay loam; weak fine subangular blocky structure; firm; few fine roots; few fine tubular pores; few fine distinct brown (10YR 4/3) clay films on faces of peds; few fine irregular masses of iron-manganese; about 2 percent gravel; slightly acid; clear smooth boundary.

2Bt2—16 to 29 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) silt coats on faces of peds; few fine irregular masses of iron-manganese; about 2 percent gravel; moderately acid; gradual smooth boundary.

2Bt3—29 to 40 inches; mottled dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) clay loam; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; many medium distinct light brownish gray (10YR 6/2) silt coats on faces of peds; few fine irregular masses of iron-manganese; about 2 percent gravel; slightly acid; clear smooth boundary.

2Bt4—40 to 54 inches; yellowish brown (10YR 5/4) clay loam; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; few fine distinct grayish brown (2.5Y 5/2) redoximorphic depletions; about 2 percent gravel; slightly acid; clear smooth boundary.

2BC—54 to 80 inches; yellowish brown (10YR 5/6) loam; weak fine prismatic structure parting to weak medium subangular blocky; firm; few fine irregular masses of iron-manganese; common fine and medium faint strong brown (7.5YR 5/6) and common fine and medium distinct strong brown (7.5YR 5/8) redoximorphic concentrations; common fine and medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; about 2 percent gravel; moderately alkaline.

Range in Characteristics

Depth to carbonates: 48 to 80 inches

Depth to glacial till: 12 to 24 inches

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—2 or 3

Texture—loam or silt loam

Reaction—strongly acid to neutral

BE horizon:

Hue—10YR or 7.5YR

Value—4 to 8

Chroma—3 to 8

Texture—loam or silt loam

Reaction—strongly acid to slightly acid

2Bt horizon:

Hue—10YR or 7.5YR

Value—4 to 8

Chroma—1 to 8

Texture—loam, clay loam, or sandy clay loam

Reaction—strongly acid to slightly acid

2BC horizon (if it occurs):

Hue—2.5Y, 10YR, or 7.5YR

Value—4 to 8

Chroma—1 to 8

Texture—clay loam, loam, or sandy clay loam

Reaction—strongly acid to moderately alkaline

Taxadjunct features: The representative pedons for the severely eroded Bassett soils in map units 171D3, 171E2, and 171E3 are taxadjuncts because the surface layer does not meet the color requirements for Mollic subgroups. These pedons are classified as fine-loamy, mixed, superactive, mesic Typic Hapludalfs.

Bremer Series

Typical Pedon

Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 1,600 feet south and 700 feet east of the northwest corner of sec. 22, T. 81 N., R. 11 W.; USGS Marengo topographic quadrangle; lat. 41 degrees 49 minutes 07.2 seconds N. and long. 92 degrees 07 minutes 20.9 seconds W., NAD 83:

Ap—0 to 7 inches; black (N 2.5/) silty clay loam, very dark gray (10YR 3/1) dry; weak fine granular structure; friable; common fine roots throughout; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A1—7 to 15 inches; black (N 2.5/) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; friable; common very fine roots throughout; many very fine tubular pores; slightly acid; clear smooth boundary.

A2—15 to 21 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; few very fine roots throughout; many very fine tubular pores; slightly acid; clear smooth boundary.

Btg1—21 to 28 inches; very dark gray (5Y 3/1) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots throughout; many very fine tubular pores; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; common fine black (10YR 2/1) iron and manganese oxides; common fine and medium prominent dark yellowish brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

Btg2—28 to 35 inches; dark gray (5Y 4/1) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots throughout; many very fine tubular pores; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; few fine and medium black (10YR 2/1) iron and manganese oxides; common fine and medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Btg3—35 to 56 inches; gray (5Y 5/1) silty clay loam; moderate medium subangular blocky structure; friable; many very fine tubular pores; common distinct gray (2.5Y 5/1) clay films on faces of peds; common fine and medium black (10YR 2/1) iron and manganese oxides; many medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; slightly acid; gradual smooth boundary.

BCg—56 to 64 inches; gray (5Y 5/1) silty clay loam; weak medium subangular blocky structure; friable; many very fine tubular pores; few distinct gray (2.5Y 5/1) clay films on faces of peds; many fine and medium black (10YR 2/1) iron and manganese oxides; many medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; slightly acid; clear wavy boundary.

Cg—64 to 80 inches; gray (5Y 5/1) silt loam; massive; friable; many very fine tubular pores; many fine and medium black (10YR 2/1) iron and manganese oxides; many coarse prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Thickness of the mollic epipedon: 24 to 36 inches

A and Ap horizons:

Hue—10YR or N

Value—2 or 3

Chroma—0 or 1

Texture—silty clay loam

Reaction—moderately acid to neutral

Bt or Btg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—3 to 5

Chroma—1 or 2

Texture—silty clay loam or silty clay

Reaction—moderately acid to neutral

BCg or Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6

Chroma—1 or 2

Texture—silty clay loam, silt loam, or silty clay

Reaction—slightly acid

Chelsea Series

Typical Pedon

Chelsea loamy fine sand, 2 to 9 percent slopes, in a pasture; in Iowa County, Iowa; 1,600 feet north and 240 feet east of the southwest corner of sec. 11, T. 80 N., R. 9 W.; USGS Oxford topographic quadrangle; lat. 41 degrees 44 minutes 57.8 seconds N. and long. 91 degrees 52 minutes 10.8 seconds W., NAD 83:

Ap—0 to 6 inches; brown (10YR 4/3) loamy fine sand, brown (10YR 5/3) dry; weak fine granular structure; very friable; many very fine and fine roots; moderately acid; abrupt smooth boundary.

E1—6 to 11 inches; dark yellowish brown (10YR 4/4) loamy fine sand, yellowish brown (10YR 5/4) dry; weak medium subangular blocky structure; very friable; common very fine roots; moderately acid; clear smooth boundary.

E2—11 to 20 inches; yellowish brown (10YR 5/4) fine sand, light yellowish brown (10YR 6/4) dry; single grain; loose; few very fine roots; strongly acid; clear smooth boundary.

E3—20 to 36 inches; light yellowish brown (10YR 6/4) fine sand, very pale brown (10YR 7/4) dry; single grain; loose; few very fine roots; strongly acid; clear smooth boundary.

E and Bt—36 to 80 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; yellowish brown (10YR 5/4) loamy fine sand and fine sandy loam bands 1/2 inch to 2 inches thick at depths of 36, 47, 54, 63, and 74 inches; strongly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—1 to 4

Texture—loamy fine sand or fine sand

Reaction—strongly acid or moderately acid

E horizon:

Hue—10YR or 7.5YR

Value—4 to 6

Chroma—2 to 6

Texture—fine sand or loamy fine sand

Reaction—strongly acid or moderately acid

E and Bt horizon:

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—sandy loam, loamy sand, fine sandy loam, loamy fine sand, or fine sand in the Bt part; fine sand or loamy fine sand in the E part

Reaction—strongly acid or moderately acid

Chequest Series

Typical Pedon

Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 1,890 feet west and 1,110 feet south of the northeast corner of sec. 32, T. 79 N., R. 12 W.; USGS Deep River topographic quadrangle; lat. 41 degrees 36 minutes 46.8 seconds N. and long. 92 degrees 16 minutes 01 second W., NAD 83:

Ap—0 to 8 inches; black (N 2.5/) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine granular structure; friable; many fine roots throughout; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A1—8 to 17 inches; black (N 2.5/) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; firm; common very fine roots throughout; common very fine tubular pores; slightly acid; clear smooth boundary.

A2—17 to 23 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; moderate fine and medium subangular blocky structure; firm; common very fine roots throughout; common very fine tubular pores; slightly acid; clear smooth boundary.

Btg1—23 to 28 inches; dark gray (10YR 4/1) silty clay; strong fine and medium subangular blocky structure; firm; common very fine roots throughout; few very fine tubular pores; few distinct dark gray (2.5Y 4/1) clay films on faces of peds; common pressure faces on faces of peds; slightly acid; clear smooth boundary.

Btg2—28 to 42 inches; gray (2.5Y 5/1) silty clay; strong medium subangular blocky structure; firm; few very fine roots throughout; few very fine tubular pores; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; common pressure faces on faces of peds; common fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

- Btg3—42 to 54 inches; gray (2.5Y 6/1) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine tubular pores; few distinct gray (2.5Y 5/1) clay films on faces of peds; common fine and medium black (10YR 2/1) iron and manganese oxides; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg1—54 to 66 inches; gray (2.5Y 6/1) silt loam; massive; friable; few fine black (10YR 2/1) iron and manganese oxides; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear wavy boundary.
- Cg2—66 to 80 inches; light brownish gray (2.5Y 6/2) loam; massive; friable; common fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Thickness of the mollic epipedon: 10 to 24 inches

Ap and A horizons:

Hue—10YR or N

Value—2 or 3

Chroma—0 to 2

Texture—silty clay loam or silt loam

Reaction—slightly acid or neutral

Btg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6

Chroma—1

Texture—silty clay loam or silty clay

Reaction—moderately acid or slightly acid

Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6

Chroma—1 or 2

Texture—silty clay loam, silt loam, loam, or clay loam

Reaction—moderately acid to neutral

Clinton Series

Typical Pedon

Clinton silt loam, 5 to 9 percent slopes, in a cultivated field; in Iowa County, Iowa; 470 feet north and 2,040 feet west of the southeast corner of sec. 23, T. 79 N., R. 12 W.; USGS Williamsburg NW topographic quadrangle; lat. 41 degrees 37 minutes 53.1 seconds N. and long. 92 degrees 12 minutes 30.1 seconds W., NAD 83:

- Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; few fine roots; common very fine tubular pores; slightly acid; abrupt smooth boundary.
- E—5 to 12 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure parting to weak thin platy; friable; few fine roots; common very fine tubular pores; few fine irregular masses of iron-manganese; slightly acid; clear smooth boundary.
- Bt1—12 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots; common very

fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—20 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; few clay coatings on surfaces along pores; common distinct brown (10YR 4/3) clay films on faces of peds; few fine irregular masses of iron-manganese; moderately acid; gradual smooth boundary.

Bt3—27 to 39 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct brown (10YR 5/3) clay films on faces of peds; few fine irregular masses of iron-manganese; moderately acid; gradual smooth boundary.

Bt4—39 to 50 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine and medium prismatic structure parting to weak coarse subangular blocky; firm; few very fine roots; common very fine tubular pores; few distinct brown (10YR 5/3) clay films on faces of peds; few fine irregular masses of iron-manganese; few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.

BC—50 to 66 inches; brown (10YR 5/3) silty clay loam; weak medium prismatic structure; friable; common very fine tubular pores; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; common fine faint grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; gradual smooth boundary.

C—66 to 80 inches; brown (10YR 5/3) silty clay loam; massive; friable; few very fine tubular pores; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; common fine faint grayish brown (10YR 5/2) redoximorphic depletions; moderately acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—1 to 3

Texture—silt loam or silty clay loam

Reaction—strongly acid to slightly acid

E horizon (if it occurs):

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture—silt loam

Reaction—strongly acid or moderately acid

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silty clay

Reaction—strongly acid or moderately acid

BC and C horizons:

Hue—10YR

Value—5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

Colo Series

Typical Pedon

Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 800 feet south and 100 feet west of the northeast corner of sec. 18, T. 79 N., R. 10 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 39 minutes 25 seconds N. and long. 92 degrees 02 minutes 48 seconds W., NAD 83:

- Ap—0 to 9 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure; friable; common fine roots; few very fine tubular pores; neutral; abrupt smooth boundary.
- A1—9 to 16 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak and moderate fine granular structure; friable; common fine roots; few very fine tubular pores; neutral; clear smooth boundary.
- A2—16 to 30 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; friable; common very fine roots; common very fine tubular pores; common medium rounded dark concretions; neutral; gradual smooth boundary.
- A3—30 to 36 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine and medium subangular blocky structure; friable; few very fine roots; common very fine tubular pores; neutral; gradual smooth boundary.
- Bg1—36 to 43 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; friable; few very fine roots; common very fine tubular pores; few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Bg2—43 to 50 inches; very dark gray (2.5Y 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine tubular pores; few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Bg3—50 to 59 inches; gray (2.5Y 4/1) silty clay loam; weak medium prismatic structure; friable; common very fine tubular pores; few fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; neutral; gradual smooth boundary.
- BCg—59 to 67 inches; gray (5Y 5/1) silty clay loam; weak coarse prismatic structure; friable; few very fine tubular pores; common fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; neutral; gradual smooth boundary.
- Cg—67 to 80 inches; light olive gray (5Y 6/2) silty clay loam; massive; friable; few very fine tubular pores; common fine and medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 4/6) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: More than 36 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR, 2.5Y, 5Y, or N; 10YR in overwash phase

Value—2 or 3; 3 to 5 in overwash phase

Chroma—0 to 2; 1 or 2 in overwash phase

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral; slightly acid to moderately alkaline in overwash phase

Bg horizon:

Hue—10YR or 2.5Y

Value—2 to 4

Chroma—1

Texture—silty clay loam

Reaction—moderately acid to neutral

BCg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—3 to 6

Chroma—1 or 2

Texture—silty clay loam

Reaction—moderately acid to neutral

Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—3 to 6

Chroma—1 or 2

Texture—silty clay loam, silt loam, or clay loam

Reaction—moderately acid to neutral

Dickinson Series

Typical Pedon

Dickinson fine sandy loam, 5 to 9 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,840 feet east and 810 feet south of the northwest corner of sec. 5, T. 80 N., R. 9 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 45 minutes 57.5 seconds N. and long. 91 degrees 56 minutes 33.1 seconds W., NAD 83:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine and medium granular structure; friable; many fine roots; few fine tubular pores; many distinct very dark brown (10YR 2/2) organic coats on faces of peds; neutral; clear smooth boundary.

A—9 to 19 inches; very dark grayish brown (10YR 3/2) fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; many fine roots; few fine tubular pores; common distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; clear smooth boundary.

Bw1—19 to 25 inches; brown (10YR 4/3) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine roots; few fine tubular pores; common distinct dark brown (10YR 3/3) organic coats on faces of peds; moderately acid; clear smooth boundary.

Bw2—25 to 30 inches; brown (10YR 4/3) fine sandy loam; weak medium prismatic structure parting to weak medium subangular blocky; very friable; common fine roots; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; moderately acid; clear smooth boundary.

BC—30 to 33 inches; yellowish brown (10YR 5/4) loamy sand; weak medium prismatic structure parting to single grain; very friable; few fine roots throughout; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; moderately acid; abrupt smooth boundary.

C1—33 to 48 inches; yellowish brown (10YR 5/4 and 5/6) fine sand; single grain; loose; moderately acid; gradual smooth boundary.

C2—48 to 80 inches; yellowish brown (10YR 5/6) fine sand; single grain; loose; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 24 inches

Depth to loamy sand or sand: 20 to 42 inches

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—fine sandy loam, sandy loam, or loam

Reaction—moderately acid to neutral

Bw horizon:

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—sandy loam or fine sandy loam

Reaction—strongly acid to slightly acid

BC and C horizons:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 to 6

Texture—loamy fine sand, loamy sand, fine sand, or sand

Reaction—moderately acid to neutral

Dinsdale Series

Typical Pedon

Dinsdale silty clay loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 515 feet east and 45 feet south of the northwest corner of sec. 2, T. 81 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 51 minutes 41.3 seconds N. and long. 92 degrees 52 minutes 05.7 seconds W., NAD 83:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; common fine roots; few fine tubular pores; common distinct very dark brown (10YR 2/2) organic coats on faces of peds; moderately acid; clear smooth boundary.

AB—10 to 14 inches; dark brown (10YR 3/3) silty clay loam, brown (10YR 4/3) dry; moderate fine and very fine subangular blocky structure; friable; common fine roots; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; clear smooth boundary.

Bt1—14 to 24 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct dark brown (10YR 3/3) clay films on faces of peds; strongly acid; clear smooth boundary.

2Bt2—24 to 33 inches; yellowish brown (10YR 5/4) clay loam; moderate fine subangular blocky structure; firm; few very fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on vertical faces of peds; about 2 percent subrounded gravel; common fine distinct strong brown (7.5YR 5/8) redoximorphic concentrations; moderately acid; gradual smooth boundary.

- 2Bt3—33 to 45 inches; about 60 percent yellowish brown (10YR 5/4) and 40 percent strong brown (7.5YR 5/8) clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; firm; few fine roots; few fine tubular pores; few distinct brown (10YR 4/3) clay films on vertical faces of peds; about 3 percent subrounded gravel; common fine distinct gray (10YR 6/1) redoximorphic depletions; moderately acid; gradual smooth boundary.
- 2BC1—45 to 58 inches; yellowish brown (10YR 5/4) clay loam; weak coarse prismatic structure; firm; very few distinct brown (10YR 5/3) clay films on vertical faces of peds; about 3 percent subrounded gravel; common fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; common fine distinct gray (10YR 6/1) redoximorphic depletions; slightly effervescent; slightly alkaline; gradual smooth boundary.
- 2BC2—58 to 80 inches; about 65 percent yellowish brown (10YR 5/4) and 35 percent strong brown (7.5YR 5/8) clay loam; extremely coarse prismatic structure; firm; about 5 percent subrounded gravel; common fine prominent yellowish red (5YR 4/6) redoximorphic concentrations; common fine distinct gray (10YR 6/1) redoximorphic depletions; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

Depth to till: 20 to 40 inches

Depth to carbonates: 45 to 65 inches

Ap, A, or AB horizon:

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture—silt loam or silty clay loam

Reaction—strongly acid to neutral

Bt horizon:

Hue—10YR

Value—3 to 5

Chroma—3 to 6

Texture—silty clay loam; a stone line is commonly at the lower boundary

Reaction—strongly acid to neutral

2Bt horizon (if it occurs):

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 to 8

Texture—loam, sandy clay loam, or clay loam; vertical seams or wedges of sand or loamy sand 2 to 6 inches wide extend downward from the stone line to a depth of 3 to 4 feet in most pedons

Reaction—moderately acid to neutral

2BC horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 8

Texture—loam, sandy clay loam, or clay loam; vertical seams or wedges of sand or loamy sand 2 to 6 inches wide extend downward from the stone line to a depth of 3 to 4 feet in most pedons

Reaction—neutral to moderately alkaline

Taxadjunct features: The representative pedon for the moderately eroded Dinsdale soil in map unit 83C2 is a taxadjunct because the surface layer does not meet the

thickness requirements for Mollisols. This pedon is classified as a fine-silty, mixed, superactive, mesic Mollic Hapludalf.

Downs Series

Typical Pedon

Downs silt loam, 5 to 9 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,160 feet north and 2,530 feet west of the southeast corner of sec. 4, T. 80 N., R. 12 W.; USGS Ladora topographic quadrangle; lat. 41 degrees 45 minutes 50.4 seconds N. and long. 92 degrees 14 minutes 58 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many fine roots; few fine tubular pores; slightly acid; clear smooth boundary.
- BE—8 to 12 inches; brown (10YR 4/3) silt loam; weak fine and very fine subangular blocky structure; friable; many fine roots; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; strongly acid; clear smooth boundary.
- Bt1—12 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate very fine and fine subangular blocky structure; friable; common fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; gradual smooth boundary.
- Bt2—20 to 26 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; very few distinct light gray (10YR 7/1) silt coats on faces of peds; strongly acid; gradual smooth boundary.
- Bt3—26 to 33 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine prismatic structure parting to moderate medium and fine subangular blocky; friable; common very fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; strongly acid; gradual smooth boundary.
- Bt4—33 to 48 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on vertical faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; few fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; few fine distinct strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- BC—48 to 62 inches; pale brown (10YR 6/3) silt loam; weak medium prismatic structure; friable; few very fine roots; few fine tubular pores; common medium faint light brownish gray (10YR 6/2) redoximorphic depletions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- C—62 to 80 inches; pale brown (10YR 6/3) silt loam; massive; friable; few fine tubular pores; common medium faint light brownish gray (10YR 6/2) redoximorphic depletions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Reaction—moderately acid to neutral

E horizon (if it occurs):

Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Reaction—strongly acid to neutral

BE horizon:

Hue—10YR
Value—4
Chroma—3 or 4
Texture—silt loam
Reaction—strongly acid to slightly acid

Bt horizon:

Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam
Reaction—strongly acid to slightly acid

BC and C horizons:

Hue—10YR
Value—5 or 6
Chroma—3 to 6
Texture—silt loam
Reaction—strongly acid to slightly acid

Taxadjunct features: The representative pedons for the severely eroded Downs soils in map units 162D3, 162E2, and 162E3 are taxadjuncts because the surface layer does not meet the color requirements for Mollic subgroups. These pedons are classified as fine-silty, mixed, superactive, mesic Typic Hapludalfs.

Ella Series

Typical Pedon

Ella silt loam, 2 to 5 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 1,740 feet south and 400 feet west of the northeast corner of sec. 4, T. 79 N., R. 10 W.; USGS Holbrook topographic quadrangle; lat. 41 degrees 36 minutes 38.4 seconds N. and long. 91 degrees 58 minutes 11 seconds W., NAD 83:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; friable; common fine roots throughout; common very fine tubular pores; slightly acid; abrupt smooth boundary.

E—9 to 15 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak thin platy structure; friable; common fine roots throughout; common very fine tubular pores; slightly acid; clear smooth boundary.

Bt1—15 to 22 inches; brown (10YR 4/3) silt loam; weak fine and medium subangular blocky structure; friable; common very fine roots throughout; common very fine

tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—22 to 36 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; strongly acid; gradual smooth boundary.

Bt3—36 to 47 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; common fine distinct yellowish brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; clear smooth boundary.

Bt4—47 to 62 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; fine irregular masses of iron-manganese; common fine distinct yellowish brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; clear smooth boundary.

2C—62 to 80 inches; dark yellowish brown (10YR 4/4) silt loam with thin strata of silt and fine sandy loam; massive; friable; few very fine tubular pores; common fine irregular masses of iron-manganese; common fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture—silt loam

Reaction—strongly acid to neutral

E horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 or 3

Texture—silt loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

2C horizon:

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—3 to 8

Texture—stratified silt loam, silty clay loam, loam, or fine sandy loam

Reaction—strongly acid to moderately alkaline

Ely Series

Typical Pedon

Ely silty clay loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 2,590 feet north and 370 feet east of the southwest corner of sec. 36, T. 80 N., R. 11 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 41 minutes 41.5 seconds N. and long. 92 degrees 05 minutes 02.4 seconds W., NAD 83:

- Ap—0 to 9 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; friable; common fine roots throughout; common very fine tubular pores; neutral; abrupt smooth boundary.
- A1—9 to 20 inches; black (10YR 2/1) silty clay loam, very dark yellowish brown (10YR 4/1) dry; moderate fine granular structure; friable; common very fine roots throughout; common very fine tubular pores; neutral; clear smooth boundary.
- A2—20 to 29 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; common very fine roots throughout; common very fine tubular pores; neutral; clear smooth boundary.
- AB—29 to 35 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; neutral; few fine distinct dark yellowish brown (10YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.
- Bg1—35 to 47 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; common fine distinct dark yellowish brown (10YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Bg2—47 to 61 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine tubular pores; many fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- BCg—61 to 68 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium subangular blocky structure; friable; common very fine tubular pores; common fine black (10YR 2/1) masses of iron-manganese accumulation; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—68 to 80 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; common very fine tubular pores; common fine black (10YR 2/1) masses of iron-manganese accumulation; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 36 inches

Depth to carbonates: More than 48 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral

AB or BA horizon:

Hue—10YR

Value—3

Chroma—1 or 2
 Texture—silty clay loam
 Reaction—moderately acid to neutral

Bg and BCg horizons:

Hue—10YR or 2.5Y
 Value—4 or 5
 Chroma—2 in the upper part; 2 to 4 in the lower part
 Texture—silty clay loam
 Reaction—moderately acid to neutral

Cg horizon:

Hue—10YR
 Value—5
 Chroma—1 to 3
 Texture—silty clay loam, silt loam, loam, or clay loam
 Reaction—moderately acid to neutral

Fayette Series

Typical Pedon

Fayette silt loam, 5 to 9 percent slopes, moderately eroded, in a cultivated field; in Iowa County, Iowa; 585 feet west and 1,720 feet south of the northeast corner of sec. 22, T. 81 N., R. 10 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 48 minutes 46.2 seconds N. and long. 91 degrees 59 minutes 20.2 seconds W., NAD 83:

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; many fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.
- BE—9 to 14 inches; brown (10YR 4/3) silt loam; weak medium platy structure parting to moderate fine subangular blocky; friable; many fine roots; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; strongly acid; clear smooth boundary.
- Bt1—14 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; very few distinct light gray (10YR 7/1) silt coats on faces of peds; strongly acid; clear smooth boundary.
- Bt2—21 to 31 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; strongly acid; clear smooth boundary.
- Bt3—31 to 48 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots; few fine tubular pores; common distinct brown (10YR 4/4) clay films on all faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; few fine distinct light grayish brown (10YR 5/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- Bt4—48 to 66 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium prismatic structure parting to moderate fine subangular blocky; friable; few very fine roots; few fine tubular pores; common distinct brown (10YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; few

black (10YR 2/1) iron-manganese concretions; common fine distinct light grayish brown (10YR 5/2) redoximorphic depletions; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.

BC—66 to 77 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure; friable; few distinct brown (10YR 4/4) clay films on faces of peds; few black (10YR 2/1) iron-manganese concretions; common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.

C—77 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few black (10YR 2/1) iron-manganese concretions; common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A horizon (in uncultivated areas):

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—strongly acid to neutral

Ap horizon:

Hue—10YR

Value—4

Chroma—2 or 3

Texture—silt loam

Reaction—strongly acid to neutral

E horizon:

Hue—10YR

Value—4 or 5

Chroma—1 to 4

Texture—silt loam or silty clay loam

Reaction—strongly acid to slightly acid

BE horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—silt loam or silty clay loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 to 6

Texture—silty clay loam

Reaction—very strongly acid to slightly acid

BC and C horizons:

Hue—10YR

Value—4 or 5

Chroma—4 to 6

Texture—silt loam or silty clay loam

Reaction—strongly acid to moderately alkaline

Gara Series

Typical Pedon

Gara loam, 14 to 18 percent slopes, moderately eroded, in a pasture; in Iowa County, Iowa; 90 feet east and 1,220 feet north of the southwest corner of sec. 17, T. 78 N., R. 11 W.; USGS Millersburg topographic quadrangle; lat. 41 degrees 33 minutes 24.3 seconds N. and long. 92 degrees 09 minutes 41.1 seconds W., NAD 83:

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many fine roots; few fine tubular pores; common distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
- BE—7 to 12 inches; dark grayish brown (10YR 4/3) loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; many fine roots; few fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
- Bt1—12 to 19 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; friable; many fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; about 5 percent rounded gravel; strongly acid; clear smooth boundary.
- Bt2—19 to 31 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; few fine tubular pores; many distinct brown (10YR 4/3) clay films on faces of peds; very few distinct light gray (10YR 7/1) silt coats on faces of peds; about 5 percent rounded gravel; strongly acid; clear smooth boundary.
- Bt3—31 to 43 inches; yellowish brown (10YR 5/4) clay loam; weak medium prismatic structure parting to moderate medium subangular and angular blocky; firm; common very fine roots; few fine tubular pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/1) silt coats on faces of peds; about 3 percent rounded gravel; few medium distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- BC—43 to 54 inches; yellowish brown (10YR 5/4) clay loam; weak medium prismatic structure; firm; few very fine roots; few fine tubular pores; few distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; very few distinct light gray (10YR 7/1) silt coats on faces of peds; about 3 percent rounded gravel; common coarse prominent strong brown (7.5YR 5/8) redoximorphic concentrations; common medium distinct light brownish gray (10YR 6/2) redoximorphic depletions; slightly acid; gradual smooth boundary.
- C—54 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; few fine tubular pores; few black (10YR 2/1) iron-manganese concretions; about 2 percent rounded gravel; many coarse prominent strong brown (7.5YR 5/8) redoximorphic concentrations; many medium distinct light brownish gray (10YR 6/2) redoximorphic depletions; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 30 to 70 inches

A or Ap horizon:

Hue—10YR

Value—3
 Chroma—1 or 2
 Texture—loam, silt loam, clay loam, or fine sandy loam
 Reaction—moderately acid to neutral

E or BE horizon:

Hue—10YR
 Value—3 to 5
 Chroma—2 to 4
 Texture—loam, silt loam, or clay loam
 Reaction—moderately acid to neutral

Bt horizon:

Hue—10YR or 7.5YR
 Value—4 or 5
 Chroma—3 to 6
 Texture—clay loam
 Reaction—very strongly acid to slightly acid

BC and C horizons:

Hue—10YR or 2.5Y
 Value—4 or 5
 Chroma—4 to 6
 Texture—clay loam or loam
 Reaction—slightly acid to moderately alkaline

Taxadjunct features: The representative pedons for the severely eroded Gara soils in map units 76D3, 76E3, 179D3, 179E2, 179E3, 179F2, 179F3, 993D2, 993E2, and 993F2 are taxadjuncts because the surface layer does not meet the color requirements for Mollic subgroups. These pedons are classified as fine-loamy, mixed, superactive, mesic Typic Hapludalfs.

Garwin Series

Typical Pedon

Garwin silty clay loam, 0 to 2 percent slopes, in a cultivated field; in Grundy County, Iowa; about 5 miles west and 3 miles south of Grundy Center; 1,440 feet east and 208 feet north of the southwest corner of sec. 29, T. 87 N., R. 17 W.; USGS Grundy Center topographic quadrangle; lat. 42 degrees 18 minutes 42 seconds N. and long. 92 degrees 51 minutes 38 seconds W., NAD 83:

- Ap—0 to 7 inches; black (N 2/) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine and medium granular structure; friable; moderately acid; clear smooth boundary.
- A1—7 to 12 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine and medium granular structure; friable; moderately acid; gradual smooth boundary.
- A2—12 to 18 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine and medium granular structure; friable; slightly acid; gradual smooth boundary.
- Bg1—18 to 22 inches; dark gray (10YR 4/1) silty clay loam; very dark gray (10YR 3/1) coats on faces of peds; moderate fine subangular blocky structure parting to moderate medium granular; friable; few fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

- Bg2—22 to 27 inches; dark gray (5Y 4/1) silty clay loam; very dark gray (10YR 3/1) coats on faces of peds; moderate very fine and fine subangular blocky structure; friable; few fine prominent yellowish brown (10YR 5/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Bg3—27 to 36 inches; dark gray (5Y 4/1) silty clay loam; moderate very fine and fine subangular blocky structure; friable; few fine black concretions (manganese oxides); common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Bg4—36 to 42 inches; gray (5Y 5/1) silty clay loam; weak medium prismatic structure parting to weak fine and medium subangular blocky; friable; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.
- BCg—42 to 48 inches; olive gray (5Y 5/2) silt loam; weak medium prismatic structure parting to weak fine and medium subangular blocky; few fine black concretions (manganese oxides); many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.
- Cg—48 to 60 inches; olive gray (5Y 5/2) silt loam; weak coarse prismatic structure; friable; few fine black concretions (manganese oxides); many medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; darker coatings on edge of filled crayfish hole at a depth between 54 and 60 inches; neutral.

Range in Characteristics

Depth to carbonates: More than 48 inches

Thickness of the mollic epipedon: 18 to 24 inches

A or Ap horizon:

Hue—10YR, 5Y, or N

Value—2 or 3

Chroma—0 or 1

Texture—silty clay loam

Reaction—moderately acid to neutral

Bg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—3 to 5

Chroma—1 or 2

Texture—silty clay loam

Reaction—moderately acid to neutral

BCg horizon:

Hue—2.5Y or 5Y

Value—4 or 5

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral

Cg horizon:

Hue—2.5Y or 5Y

Value—4 to 6

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to slightly alkaline

Givin Series

Typical Pedon

Givin silt loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 480 feet east and 1,850 feet south of the northwest corner of sec. 33, T. 78 N., R. 10 W.; USGS North English topographic quadrangle; lat. 41 degrees 31 minutes 12 seconds N. and long. 92 degrees 01 minute 15 seconds W., NAD 83:

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; common very dark gray (10YR 3/1) organic coats on faces of peds; slightly acid; abrupt smooth boundary.
- E—7 to 12 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak thick platy structure parting to weak fine subangular blocky; friable; few fine roots; few fine tubular pores; common distinct very dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; clear smooth boundary.
- BE—12 to 17 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct light brownish gray (10YR 6/2) (dry) silt coats on faces of peds; common distinct very dark brown (10YR 3/3) organic coats on faces of peds; few fine irregular masses of iron-manganese; moderately acid; clear smooth boundary.
- Btg1—17 to 27 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg2—27 to 42 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; few fine roots; few fine tubular pores; common distinct olive gray (5Y 5/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg3—42 to 50 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium and coarse prismatic structure; friable; few fine roots; few fine tubular pores; few distinct olive gray (5Y 5/2) clay films on faces of peds; few fine irregular masses of iron-manganese; many medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- BCg—50 to 61 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse prismatic structure; friable; few fine roots; few fine tubular pores; few fine irregular masses of iron-manganese; many medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—61 to 80 inches; light brownish gray (2.5Y 5/2) silty clay loam; massive; friable; few fine irregular masses of iron-manganese; many medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 80 inches

Ap horizon:

Hue—10YR
 Value—2 or 3
 Chroma—1 or 2
 Texture—silt loam
 Reaction—moderately acid or slightly acid

E horizon:

Hue—10YR
 Value—4 or 5
 Chroma—2
 Texture—silt loam
 Reaction—strongly acid to slightly acid

BE horizon:

Hue—10YR
 Value—4 or 5
 Chroma—2
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

Btg horizon:

Hue—10YR or 2.5Y
 Value—4 or 5
 Chroma—2 or 3
 Texture—silty clay loam or silty clay
 Reaction—strongly acid to slightly acid

BCg and Cg horizons:

Hue—2.5Y or 5Y
 Value—4 or 5
 Chroma—2
 Texture—silty clay loam
 Reaction—moderately acid or slightly acid

Greenbush Series***Typical Pedon***

Greenbush silt loam, on a slope of 2 percent in a cultivated field; in Warren County, Illinois; about 0.5 mile west and 2.25 miles south of Greenbush; 1,500 feet west and 1,500 feet north of the southeast corner of sec. 18, T. 8 N., R. 1 W.; USGS Greenbush topographic quadrangle; lat. 40 degrees 32 minutes 45 seconds N. and long. 90 degrees 40 minutes 40 seconds W., NAD 27:

Ap—0 to 6 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate fine granular structure; friable; slightly acid; abrupt smooth boundary.

E—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam, light grayish brown (10YR 6/2) dry; weak thin platy structure; friable; common faint very dark gray (10YR 3/1) organic coats on faces of peds; moderately acid; abrupt smooth boundary.

BE—10 to 17 inches; brown (10YR 4/3) silt loam; moderate medium platy structure parting to weak fine subangular blocky; friable; few distinct very dark gray (10YR 3/1) organic coats and common distinct gray (10YR 6/1) silt coats on faces of peds; moderately acid; clear smooth boundary.

Bt1—17 to 29 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate fine and medium angular blocky; friable; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds;

common distinct gray (10YR 6/1) silt coats on faces of peds; strongly acid; gradual smooth boundary.

Bt2—29 to 38 inches; brown (10YR 5/3) silty clay loam; weak medium prismatic structure parting to moderate fine angular blocky; friable; common faint brown (10YR 4/3) clay films on faces of peds; many faint light gray (10YR 7/2) silt coats on faces of peds; common prominent black (7.5YR 2/1) manganese stains; common medium distinct yellowish brown (10YR 5/6) iron accumulations; common medium prominent gray (5Y 6/1) iron depletions within peds; strongly acid; gradual wavy boundary.

Bt3—38 to 53 inches; brown (10YR 5/3) silty clay loam; weak medium prismatic structure parting to moderate fine angular blocky; friable; common faint brown (10YR 4/3) clay films on faces of peds; many distinct light gray (10YR 7/2) silt coats on faces of peds; common prominent black (7.5YR 2/1) manganese stains; common medium distinct yellowish brown (10YR 5/6) iron accumulations; common medium prominent gray (5Y 6/1) iron depletions within peds; strongly acid; gradual wavy boundary.

BCt—53 to 75 inches; about 60 percent brown (10YR 5/3) and 40 percent light olive gray (5Y 6/2) silt loam; weak medium and coarse prismatic structure parting to weak fine and medium angular blocky; friable; few faint brown (10YR 4/3) clay films on faces of peds; few faint light gray (10YR 7/2) silt coats on faces of peds; common prominent black (7.5YR 2/1) manganese stains; common medium distinct yellowish brown (10YR 5/6) iron accumulations within peds; moderately acid; gradual wavy boundary.

C—75 to 80 inches; about 55 percent yellowish brown (10YR 5/4) and 45 percent light olive gray (5Y 6/2) silt loam; massive; friable; many prominent black (7.5YR 2/1) manganese stains; many medium distinct light brownish gray (10YR 6/2) iron depletions within peds; moderately acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—3 to 5

Chroma—2 or 3

Texture—silt loam

Reaction—strongly acid to slightly acid

B horizon:

Hue—10YR

Value—4 or 5

Chroma—3 to 6

Texture—silty clay loam

Reaction—very strongly acid to moderately acid

C horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6

Chroma—2 to 6

Texture—silt loam

Reaction—strongly acid to slightly acid

Taxadjunct features: The representative pedons for the severely eroded Greenbush soils in map units 162D3 and 162E3 are taxadjuncts because the surface layer does not meet the color requirements for Mollic subgroups. These pedons are classified as fine-silty, mixed, superactive, mesic Typic Hapludalfs.

Hayfield Series

Typical Pedon

Hayfield silt loam, 0 to 2 percent slopes, in a pasture; in Iowa County, Iowa; 1,920 feet south and 1,070 feet west of the northeast corner of sec. 11, T. 80 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 45 minutes 20.5 seconds N. and long. 91 degrees 51 minutes 19.9 seconds W., NAD 83:

Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; many fine roots; common very fine tubular pores; few fine prominent dark brown (7.5YR 3/4) redoximorphic concentrations; slightly acid; abrupt smooth boundary.

E—9 to 15 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak thin platy structure; friable; common fine roots; common very fine tubular pores; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

BE—15 to 19 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure parting to weak thin platy; friable; common very fine roots; common very fine tubular pores; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.

Bt—19 to 30 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; few very fine roots; few very fine tubular pores; common distinct gray (2.5Y 5/1) clay films on faces of peds; common fine faint grayish brown (10YR 5/2) redoximorphic depletions and common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.

2BC—30 to 34 inches; light olive brown (2.5Y 5/3) sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; few very fine tubular pores; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.

2C1—34 to 42 inches; light yellowish brown (2.5Y 6/3) sand; single grain; loose; few fine roots; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

2C2—42 to 57 inches; light olive brown (2.5Y 5/4) loamy sand; single grain; loose; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

2C3—57 to 80 inches; strong brown (7.5YR 5/6) loamy sand; single grain; loose; common fine distinct dark reddish brown (7.5YR 3/4) redoximorphic concentrations; slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: More than 48 inches

Depth to sandy material: 20 to 40 inches

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam or loam
Reaction—moderately acid or slightly acid

E and BE horizons:

Hue—10YR
Value—4 or 5
Chroma—1 or 2
Texture—silt loam or loam
Reaction—moderately acid or slightly acid

Bt horizon:

Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—silt loam or loam in the upper part; silty clay loam, silt loam, loam, or clay loam in the lower part
Reaction—strongly acid or moderately acid

2BC horizon:

Hue—2.5Y or 5Y
Value—5 or 6
Chroma—1 to 6
Texture—loamy sand, coarse sandy loam, sandy loam, or loamy coarse sand
Reaction—moderately acid to neutral

2C horizon:

Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loamy sand, sand, coarse sand, or loamy coarse sand
Reaction—moderately acid to slightly alkaline

Jackson Series

Typical Pedon

Jackson silt loam, 2 to 5 percent slopes, rarely flooded (mapped as a minor component in map unit 2219B), in a cultivated field; in Iowa County, Iowa; 1,250 feet south and 2,160 feet west of the northeast corner of sec. 30, T. 78 N., R. 10 W.; USGS North English topographic quadrangle; lat. 41 degrees 32 minutes 22.2 seconds N. and long. 92 degrees 02 minutes 32.6 seconds W., NAD 83:

Ap—0 to 7 inches; very dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common fine roots throughout; common fine tubular pores; slightly acid; clear smooth boundary.

Bt1—7 to 16 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—16 to 31 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt3—31 to 46 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; common very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) redoximorphic depletions; common fine distinct

strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

2C—46 to 80 inches; strong brown (10YR 5/6), stratified loamy sand and sand; single grain; loose; slightly acid.

Range in Characteristics

Thickness of the silty alluvium: 40 to 60 inches

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture—silt loam

Reaction—strongly acid to neutral

E horizon (if it occurs):

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—silt loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

2C horizon:

Hue—7.5YR or 10YR

Value—4 to 8

Chroma—2 to 6

Texture—stratified loamy sand or sand

Reaction—strongly acid to slightly acid

Judson Series

Typical Pedon

Judson silty clay loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,040 feet east and 805 feet south of the northwest corner of sec. 15, T. 79 N., R. 9 W.; USGS Conroy topographic quadrangle; lat. 41 degrees 39 minutes 23 seconds N. and long. 91 degrees 53 minutes 13 seconds W., NAD 83:

Ap—0 to 6 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; neutral; clear smooth boundary.

A—6 to 25 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; neutral; gradual smooth boundary.

AB—25 to 31 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; few fine roots; few fine tubular pores; neutral; gradual smooth boundary.

- Bw1—31 to 37 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; gradual smooth boundary.
- Bw2—37 to 45 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; few distinct dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; gradual smooth boundary.
- BC—45 to 55 inches; brown (10YR 5/3) silty clay loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; few fine tubular pores; few fine faint grayish brown (10YR 5/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.
- C1—55 to 71 inches; yellowish brown (10YR 5/4) silty clay loam; massive; friable; few fine irregular masses of iron-manganese; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; neutral; gradual smooth boundary.
- C2—71 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few fine irregular masses of iron-manganese; few fine distinct grayish brown (10YR 5/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 32 to 52 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral

AB horizon:

Hue—10YR

Value—2 or 3

Chroma—2

Texture—silty clay loam

Reaction—moderately acid to neutral

Bw horizon:

Hue—10YR

Value—3 to 5

Chroma—3 to 5

Texture—silty clay loam

Reaction—moderately acid to neutral

BC and C horizons:

Hue—10YR

Value—3 to 5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—slightly acid to slightly alkaline

Kenyon Series

Typical Pedon

Kenyon loam, 5 to 9 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,050 feet west and 160 feet south of the northeast corner of sec. 3, T. 81 N., R. 9 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 51 minutes 40.1 seconds N. and long. 91 degrees 51 minutes 39.1 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many fine roots throughout; few fine tubular pores; common distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
- A—8 to 15 inches; very dark brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; many fine roots throughout; few fine tubular pores; few distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
- BA—15 to 21 inches; brown (10YR 4/3) loam, brown (10YR 5/3) dry; moderate medium and fine subangular blocky structure; friable; many fine roots throughout; few fine tubular pores; common distinct dark brown (10YR 3/3) organic coats on faces of peds; slightly acid; clear smooth boundary.
- 2Bw1—21 to 33 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium prismatic structure parting to moderate fine subangular blocky; firm; common fine roots throughout; few fine tubular pores; few distinct brown (10YR 4/3) organic coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; about 5 percent gravel; moderately acid; gradual smooth boundary.
- 2Bw2—33 to 47 inches; brown (10YR 5/3) loam; weak medium prismatic structure; firm; common fine roots throughout; few fine tubular pores; few distinct brown (10YR 4/3) organic coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; about 5 percent gravel; moderately acid; clear smooth boundary.
- 2BC—47 to 53 inches; grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) loam; weak medium prismatic structure; firm; few fine roots throughout; few fine tubular pores; few black (10YR 2/1) iron and manganese concretions; many coarse prominent strong brown (7.5YR 5/6) redoximorphic concentrations; about 5 percent gravel; slightly acid; gradual smooth boundary.
- 2C1—53 to 63 inches; grayish brown (2.5Y 5/2) loam; massive; firm; about 5 percent gravel; many medium distinct strong brown (7.5YR 5/6) redoximorphic concentrations; slightly effervescent; slightly alkaline; gradual smooth boundary.
- 2C2—63 to 84 inches; pale brown (10YR 6/3) loam; massive; firm; about 5 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 45 to 66 inches

A or Ap horizon:

Hue—10YR

Value—2

Chroma—1 or 2

Texture—loam or silt loam

Reaction—strongly acid to neutral

AB or BA horizon (if it occurs):

Hue—10YR

Value—3 or 4
 Chroma—2 or 3
 Texture—loam, silt loam, or sandy clay loam
 Reaction—strongly acid to slightly acid

2Bw horizon:

Hue—10YR or 2.5Y
 Value—4 or 5
 Chroma—2 to 6
 Texture—loam, clay loam, or sandy clay loam
 Reaction—strongly acid or moderately acid

2BC or 2C horizon (if it occurs):

Hue—7.5YR to 5Y
 Value—4 to 8
 Chroma—1 to 8
 Texture—loam
 Reaction—slightly acid to moderately alkaline
 Moist bulk density—1.75 to 1.9 gm/cc

Taxadjunct features: The representative pedons for the moderately eroded Kenyon soils in map units 83C, 83C2, and 83D2 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These pedons are classified as fine-loamy, mixed, superactive, mesic Dystric Eutrudepts.

Keomah Series

Typical Pedon

Keomah silt loam, 0 to 2 percent slopes, in a pasture; in Iowa County, Iowa; 1,360 feet south and 2,300 feet west of the northeast corner of sec. 3, T. 78 N., R. 9 W.; USGS Amish topographic quadrangle; lat. 41 degrees 36 minutes 02.6 seconds N. and long. 91 degrees 51 minutes 56.3 seconds W., NAD 83:

- A—0 to 3 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate fine granular structure; friable; many fine roots throughout; few fine tubular pores; moderately acid; abrupt smooth boundary.
- E1—3 to 8 inches; dark gray (10YR 4/1) silt loam, gray (10YR 6/1) dry; moderate medium platy structure; friable; many fine roots throughout; few fine tubular pores; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; moderately acid; abrupt smooth boundary.
- E2—8 to 13 inches; dark grayish brown (10YR 4/2) silt loam, light grayish brown (10YR 6/2) dry; weak medium platy structure parting to moderate very fine subangular blocky; friable; many fine roots throughout; few fine tubular pores; few distinct light gray (10YR 7/2) silt coats on all faces of peds; moderately acid; clear smooth boundary.
- BE—13 to 17 inches; grayish brown (10YR 5/2) silt loam; weak medium platy structure parting to weak fine subangular blocky; friable; many fine roots throughout; few fine tubular pores; many distinct light gray (10YR 7/2) silt coats on faces of peds; few fine irregular masses of iron-manganese; few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; abrupt smooth boundary.
- Bt1—17 to 29 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; few fine tubular pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few black (10YR 2/1) iron and

- manganese concretions; many medium faint strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; clear smooth boundary.
- Bt2—29 to 41 inches; brown (10YR 5/3) and grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on all faces of peds; few black (10YR 2/1) iron and manganese concretions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- Btg1—41 to 51 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; many medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- Btg2—51 to 61 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; few fine roots; few fine tubular pores; few distinct grayish brown (2.5Y 5/2) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; many medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- BCg—61 to 70 inches; grayish brown (2.5Y 5/2) silty clay loam; weak medium prismatic structure; friable; few distinct light gray (10YR 7/2) silt coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; many coarse prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—70 to 80 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; few black (10YR 2/1) iron and manganese concretions; many coarse prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A horizon:

Hue—10YR
Value—3
Chroma—1
Texture—silt loam
Reaction—moderately acid to neutral

Ap horizon (if it occurs):

Hue—10YR
Value—4
Chroma—1 or 2
Texture—silt loam
Reaction—moderately acid to neutral

E horizon:

Hue—10YR
Value—4 or 5
Chroma—1 to 3
Texture—silt loam
Reaction—strongly acid to slightly acid

BE horizon:

Hue—10YR
 Value—4 or 5
 Chroma—2 or 3
 Texture—silt loam or silty clay loam
 Reaction—strongly acid to neutral

Bt horizon (upper part):

Hue—10YR
 Value—4 or 5
 Chroma—3 or 4
 Texture—silty clay or silty clay loam
 Reaction—strongly acid to slightly acid

Bt horizon (lower part) or Btg horizon:

Hue—10YR, 2.5Y, or 5Y
 Value—4 or 5
 Chroma—2 or 3
 Texture—silty clay loam or silty clay
 Reaction—strongly acid to slightly acid

BCg and Cg horizons:

Hue—10YR, 2.5Y, or 5Y
 Value—4 or 5
 Chroma—2 to 4
 Texture—silty clay loam or silt loam
 Reaction—strongly acid to neutral

Keswick Series***Typical Pedon***

Keswick silty clay loam, 9 to 14 percent slopes, moderately eroded, in a pasture; in Iowa County, Iowa; 565 feet south and 2,240 feet west of the northeast corner of sec. 26, T. 79 N., R. 11 W.; USGS Williamsburg NW topographic quadrangle; lat. 41 degrees 37 minutes 43.1 seconds N. and long. 92 degrees 12 minutes 36.6 seconds W., NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many fine roots; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; clear smooth boundary.

BE—7 to 13 inches; brown (10YR 4/3) silty clay loam; weak medium platy structure parting to moderate fine subangular blocky; friable; many fine roots; few fine tubular pores; common distinct dark brown (10YR 3/3) organic coats on faces of peds; strongly acid; abrupt smooth boundary.

2Bt1—13 to 24 inches; yellowish red (5YR 4/6) clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; few fine tubular pores; common distinct reddish brown (5YR 4/4) clay films on faces of peds; about 3 percent subrounded gravel; few fine prominent grayish brown (10YR 5/2) redoximorphic depletions; strongly acid; clear smooth boundary.

2Bt2—24 to 37 inches; strong brown (7.5YR 4/6) clay; moderate medium subangular blocky structure; firm; common fine roots; few fine tubular pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; about 2 percent subrounded gravel; common fine faint yellowish red (5YR 4/6) redoximorphic concentrations; common

fine prominent light brownish gray (10YR 6/2) redoximorphic depletions; strongly acid; clear smooth boundary.

2Bt3—37 to 52 inches; yellowish brown (10YR 5/6) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; common distinct brown (7.5YR 4/4) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; about 2 percent subrounded gravel; common fine distinct yellowish red (5YR 4/6) redoximorphic concentrations; common fine prominent light brownish gray (10YR 6/2) redoximorphic depletions; slightly acid; gradual smooth boundary.

2BC—52 to 70 inches; yellowish brown (10YR 5/6) clay loam; moderate medium prismatic structure; firm; few fine roots; few fine tubular pores; few distinct brown (7.5YR 4/4) clay films on faces of peds; very few distinct light gray (10YR 7/2) silt coats on faces of peds; few black (10YR 2/1) iron and manganese concretions; about 5 percent subrounded gravel; common fine distinct yellowish red (5YR 4/6) redoximorphic concentrations; common fine prominent light brownish gray (10YR 6/2) redoximorphic depletions; slightly acid; gradual smooth boundary.

2C—70 to 80 inches; yellowish brown (10YR 5/6) clay loam; massive; firm; about 3 percent subrounded gravel; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 42 to 75 inches

Ap or A horizon:

Hue—10YR

Value—2 to 4

Chroma—1 or 2

Texture—loam, silt loam, or clay loam

Reaction—strongly acid to neutral

E horizon (if it occurs):

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—loam, silt loam, or clay loam

Reaction—very strongly acid to slightly acid

BE horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—loam, silt loam, or clay loam

Reaction—very strongly acid to slightly acid

2Bt horizon (upper part):

Hue—5YR or 7.5YR

Value—4 or 5

Chroma—3 to 6

Texture—clay or clay loam

Reaction—very strongly acid to moderately acid

Other features—a pebble band typically occurs at the top of this horizon

2Bt horizon (lower part) and 2BC horizon:

Hue—10YR, 7.5YR, or 5YR

Value—4 or 5

Chroma—1 to 6
Texture—clay or clay loam
Reaction—very strongly acid to slightly alkaline

2C horizon:

Hue—10YR, 7.5YR, or 5YR
Value—4 or 5
Chroma—1 to 6
Texture—clay loam
Reaction—slightly acid to moderately alkaline

Klum Series

Typical Pedon

Klum fine sandy loam, 0 to 2 percent slopes, frequently flooded, on a flood plain; in Des Moines County, Iowa; about 7 miles north of Middletown; about 1,810 feet west and 250 feet south of the northeast corner of sec. 26, T. 71 N., R. 4 W.; USGS Pleasant Grove topographic quadrangle; lat. 40 degrees 55 minutes 43 seconds N. and long. 91 degrees 16 minutes 58 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam, grayish brown (10YR 5/2) dry; weak very fine granular structure; very friable; neutral; clear smooth boundary.
- C1—8 to 12 inches; stratified dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) sandy loam, brown (10YR 5/3) dry; massive with weak thin alluvial stratification; friable; neutral; clear smooth boundary.
- C2—12 to 25 inches; stratified dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2), and dark brown (10YR 3/3) loam and fine sandy loam; massive with weak thin alluvial stratification; very friable; neutral; gradual smooth boundary.
- C3—25 to 60 inches; stratified dark brown (10YR 3/3), dark grayish brown (10YR 4/2), very dark grayish brown (10YR 3/2), brown (10YR 4/3), and grayish brown (10YR 5/2) fine sandy loam, silt loam, and loam; massive with weak thin alluvial stratification; very friable; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—fine sandy loam or sandy loam
Reaction—slightly acid or neutral

C horizon:

Hue—7.5YR, 10YR, or 2.5Y
Value—3 to 6
Chroma—2 to 4
Texture—stratified fine sandy loam, sandy loam, silt loam, loam, or loamy fine sand
Reaction—slightly acid or neutral

Koszta Series

Typical Pedon

Koszta silt loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 780 feet south and 820 feet west of the northeast corner of sec. 12, T. 78 N., R. 11 W.; USGS North English topographic quadrangle; lat. 41 degrees 34 minutes 49 seconds N. and long. 92 degrees 04 minutes 07 seconds W., NAD 83:

- Ap—0 to 9 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; common fine and medium roots; common medium tubular pores; neutral; abrupt smooth boundary.
- E—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak thick platy structure parting to moderate fine subangular blocky; friable; common fine and medium roots; common medium tubular pores; few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- Btg1—14 to 21 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine subangular blocky structure; friable; common fine roots; common fine tubular pores; few dark grayish brown (10YR 4/2) clay films on faces of peds; moderately acid; gradual smooth boundary.
- Btg2—21 to 29 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; common fine tubular pores; common dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg3—29 to 41 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common fine tubular pores; common dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Btg4—41 to 51 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; common fine tubular pores; few dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- Cg—51 to 80 inches; stratified light brownish gray (2.5Y 6/2) and dark grayish brown (10YR 4/2) silt loam and sandy loam; massive; friable; few fine irregular masses of iron-manganese; many fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 70 inches

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—strongly acid to neutral

E horizon:

Hue—10YR

Value—4 or 5
 Chroma—2
 Texture—silt loam
 Reaction—strongly acid to neutral

Btg horizon:

Hue—10YR
 Value—4 or 5
 Chroma—2
 Texture—silty clay loam
 Reaction—strongly acid to neutral

C horizon:

Hue—2.5Y or 10YR
 Value—4 to 6
 Chroma—2 to 6
 Texture—silty clay loam with thin strata of coarser material
 Reaction—slightly acid to slightly alkaline

Ladoga Series

Typical Pedon

Ladoga silt loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 2,650 feet east and 1,750 feet north of the southwest corner of sec. 17, T. 78 N., R. 11 W.; USGS Millersburg topographic quadrangle; lat. 41 degrees 33 minutes 11.9 seconds N. and long. 92 degrees 09 minutes 41.8 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many fine and medium roots; few fine tubular pores; many distinct very dark brown (10YR 2/2) organic coats on faces of peds; slightly acid; gradual smooth boundary.
- BE—8 to 12 inches; brown (10YR 4/3) silt loam; weak medium platy structure parting to weak very fine and fine subangular blocky; friable; many fine roots; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on all faces of peds; slightly acid; gradual smooth boundary.
- Bt1—12 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine and very fine subangular blocky structure; friable; many fine roots; few fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
- Bt2—22 to 32 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct light brownish gray (10YR 6/2) silt coats on vertical faces of peds; strongly acid; clear smooth boundary.
- Bt3—32 to 40 inches; brown (10YR 5/3) silty clay loam; moderate fine subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct light brownish gray (10YR 6/2) silt coats on vertical faces of peds; few black (10YR 2/1) iron and manganese oxides; common fine faint grayish brown (10YR 5/2) redoximorphic depletions; common medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; strongly acid; clear smooth boundary.
- Bt4—40 to 52 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; few fine tubular pores; common distinct brown (10YR 5/3) clay films on faces of peds; few black (10YR 2/1) iron and manganese oxides; few

distinct light brownish gray (10YR 6/2) silt coats on vertical faces of peds; common fine and medium distinct strong brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; strongly acid; gradual smooth boundary.

BC—52 to 62 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure; friable; few very fine roots; few fine tubular pores; few black (10YR 2/1) iron and manganese oxides; common fine and medium distinct strong brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; gradual smooth boundary.

C—62 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common fine and medium distinct strong brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (10YR 5/2) redoximorphic depletions; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

BE horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silty clay

Reaction—strongly acid or moderately acid

BC and C horizons:

Hue—10YR

Value—5

Chroma—2 to 4

Texture—silty clay loam or silt loam

Reaction—moderately acid or slightly acid

Taxadjunct features: The representative pedons for the severely eroded Ladoga soils in map units 76D3, 76E2, 76E3, 179D3, and 179E3 are taxadjuncts because the surface layer does not meet the color requirements for Mollic subgroups. These pedons are classified as fine, smectitic, mesic Typic Hapludalfs.

Lawson Series

Typical Pedon

Lawson silt loam, 0 to 2 percent slopes, occasionally flooded, on a flood plain, in a cultivated field; in Iowa County, Iowa; 500 feet north and 80 feet east of the southwest

corner of sec. 12, T. 80 N., R. 12 W.; USGS Williamsburg NW topographic quadrangle; lat. 41 degrees 44 minutes 47.6 seconds N. and long. 92 degrees 12 minutes 05.2 seconds W., NAD 83:

Ap—0 to 8 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; friable; common fine and medium roots throughout; common very fine tubular pores; neutral; abrupt smooth boundary.

A1—8 to 16 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common very fine roots throughout; common very fine tubular pores; slightly acid; clear smooth boundary.

A2—16 to 29 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; neutral; clear smooth boundary.

Cg1—29 to 42 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; few very fine roots throughout; common very fine tubular pores; common faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; few fine distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Cg2—42 to 58 inches; dark grayish brown (10YR 4/2) silt loam; massive; friable; common very fine tubular pores; common fine and medium distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Cg3—58 to 80 inches; dark grayish brown (10YR 4/2), stratified silt loam and loam; massive; friable; common very fine tubular pores; common fine and medium distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 40 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam or silty clay loam

Reaction—slightly acid to slightly alkaline

C horizon:

Hue—10YR or 2.5Y

Value—3 to 6

Chroma—1 to 3

Texture—silt loam or loam

Reaction—slightly acid to slightly alkaline

Lindley Series

Typical Pedon

Lindley loam, 9 to 14 percent slopes, moderately eroded, in a pasture; in Iowa County, Iowa; 600 feet east and 2,380 feet north of the southwest corner of sec. 32, T. 79 N., R. 10 W.; USGS North English topographic quadrangle; lat. 41 degrees 36 minutes 26.8 seconds N. and long. 92 degrees 02 minutes 37.4 seconds W., NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable;

many fine roots throughout; few fine tubular pores; strongly acid; abrupt smooth boundary.

E—7 to 10 inches; brown (10YR 4/3) loam, brown (10YR 5/3) dry; moderate fine and very fine subangular blocky structure; friable; many fine roots throughout; few fine tubular pores; very strongly acid; clear smooth boundary.

Bt1—10 to 24 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; many fine roots throughout; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; few distinct very pale brown (10YR 7/3) sand skeletons on faces of peds; about 3 percent subrounded gravel; very strongly acid; gradual smooth boundary.

Bt2—24 to 36 inches; yellowish brown (10YR 5/4) clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common fine roots throughout; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; common distinct very pale brown (10YR 7/3) sand skeletons on faces of peds; common black (10YR 2/1) iron and manganese concretions; about 3 percent rounded gravel; many medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; many medium distinct grayish brown (10YR 5/2) redoximorphic depletions; very strongly acid; clear smooth boundary.

Bt3—36 to 48 inches; yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots throughout; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; common black (10YR 2/1) iron and manganese concretions; about 2 percent subrounded gravel; many medium distinct grayish brown (10YR 5/2) redoximorphic depletions; moderately acid; gradual smooth boundary.

Bt4—48 to 57 inches; yellowish brown (10YR 5/4 and 5/6) clay loam; weak medium prismatic structure; firm; few fine roots throughout; few fine tubular pores; few distinct brown (10YR 4/3) clay films on surfaces along root channels; common black (10YR 2/1) iron and manganese concretions; about 2 percent rounded gravel; many medium distinct grayish brown (10YR 5/2) redoximorphic depletions; slightly acid; gradual smooth boundary.

C—57 to 80 inches; brownish yellow (10YR 6/6) clay loam; massive; firm; common black (10YR 2/1) iron and manganese concretions; about 2 percent rounded gravel; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: More than 40 inches

A or Ap horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 5

Texture—silt loam, loam, or clay loam

Reaction—very strongly acid to neutral

E horizon (if it occurs):

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture—silt loam, loam, clay loam, or fine sandy loam

Reaction—very strongly acid to slightly acid

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 8
Texture—clay loam or loam
Reaction—very strongly acid to slightly acid

C horizon:

Hue—10YR or 7.5YR
Value—4 to 6
Chroma—1 to 6
Texture—clay loam or loam
Reaction—slightly acid to moderately alkaline

Mahaska Series

Typical Pedon

Mahaska silty clay loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,980 feet west and 1,940 feet north of the southeast corner of sec. 21, T. 80 N., R. 10 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 43 minutes 20 seconds N. and long. 92 degrees 00 minutes 48 seconds W., NAD 83:

- Ap—0 to 8 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.
- A—8 to 17 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; slightly acid; clear smooth boundary.
- BA—17 to 23 inches; dark grayish brown (2.5Y 4/2) silty clay loam, grayish brown (2.5Y 5/2) dry; moderate very fine subangular blocky structure; friable; few fine roots; few fine tubular pores; many distinct very dark gray (10YR 3/1) organic coats on faces of peds; moderately acid; clear smooth boundary.
- Btg1—23 to 29 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate fine subangular blocky structure; firm; few fine roots; few fine tubular pores; common dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; common fine faint grayish brown (2.5Y 5/2) redoximorphic depletions; moderately acid; gradual smooth boundary.
- Btg2—29 to 36 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate fine and medium subangular blocky structure; firm; few fine roots; few fine tubular pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and brown (7.5YR 4/4) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg3—36 to 46 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; many distinct olive gray (5Y 5/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg4—46 to 61 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse prismatic structure; friable; few fine roots; few fine tubular pores; few distinct gray (2.5Y 5/1) clay films on surfaces along root channels and pores; very few distinct black (10YR 2/1) organic coats on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; moderately acid; gradual smooth boundary.

Cg—61 to 80 inches; light olive gray (5Y 6/2) silty clay loam; massive; friable; few fine tubular pores; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 14 to 24 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silty clay loam

Reaction—strongly acid to slightly acid

BA horizon:

Hue—2.5Y or 10YR

Value—3 or 4

Chroma—2 to 4

Texture—silty clay loam

Reaction—strongly acid to slightly acid

Bt or Btg horizon (upper part):

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—2 or 3

Texture—silty clay loam or silty clay

Reaction—strongly acid or moderately acid

Bt or Btg horizon (lower part):

Hue—2.5Y or 5Y

Value—4 to 6

Chroma—2 or 3

Texture—silty clay loam or silty clay

Reaction—strongly acid or moderately acid

Cg horizon:

Hue—2.5Y or 5Y

Value—5 or 6

Chroma—1 or 2

Texture—silty clay loam

Reaction—moderately acid to neutral

Muscatine Series

Typical Pedon

Muscatine silty clay loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,340 feet south and 240 feet west of the northeast corner of sec. 11, T. 80 N., R. 10 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 45 minutes 22 seconds N. and long. 91 degrees 58 minutes 09 seconds W., NAD 83:

Ap—0 to 10 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine granular structure; friable; few fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.

- A—10 to 17 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; slightly acid; gradual smooth boundary.
- BA—17 to 23 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; friable; few fine roots; few fine tubular pores; few fine irregular masses of iron-manganese; slightly acid; gradual smooth boundary.
- Bg1—23 to 33 inches; dark grayish brown (2.5Y 4/2) silty clay loam; moderate fine subangular blocky structure; friable; few fine roots; few fine tubular pores; very few distinct very dark gray (10YR 3/1) organic coats on faces of peds; common fine prominent yellowish brown (10YR 5/8) redoximorphic concentrations; common fine faint grayish brown (2.5Y 5/2) redoximorphic depletions; few fine irregular masses of iron-manganese; moderately acid; gradual smooth boundary.
- Bg2—33 to 44 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; common fine prominent yellowish brown (10YR 5/6) and common fine distinct brown (7.5YR 4/4) redoximorphic concentrations; few fine irregular masses of iron-manganese; moderately acid; gradual smooth boundary.
- BCg—44 to 52 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse subangular blocky structure; friable; few fine roots; few fine tubular pores; common fine and medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; few fine irregular masses of iron-manganese; neutral; gradual smooth boundary.
- Cg1—52 to 64 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; common fine prominent yellowish brown (10YR 5/6) and few coarse prominent strong brown (7.5YR 5/8) redoximorphic concentrations; few fine irregular masses of iron-manganese; neutral; gradual smooth boundary.
- Cg2—64 to 80 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; few fine irregular masses of iron-manganese; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 14 to 24 inches

Depth to carbonates: More than 48 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral

BA horizon:

Hue—2.5Y or 10YR

Value—3

Chroma—2 to 4

Texture—silty clay loam

Reaction—moderately acid to neutral

Bg horizon:

Hue—2.5Y or 10YR

Value—4 or 5

Chroma—2 to 4

Texture—silty clay loam

Reaction—moderately acid to neutral

BCg and Cg horizons:

Hue—2.5Y or 5Y

Value—5 or 6

Chroma—2 to 4

Texture—silty clay loam or silt loam

Reaction—slightly acid to slightly alkaline

Nevin Series***Typical Pedon***

Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 1,550 feet east and 1,630 feet north of the southwest corner of sec. 17, T. 81 N., R. 11 W.; USGS Ladora topographic quadrangle; lat. 41 degrees 49 minutes 22.5 seconds N. and long. 92 degrees 05 minutes 51.9 seconds W., NAD 83:

- Ap—0 to 8 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many fine roots throughout; common fine tubular pores; slightly acid; abrupt smooth boundary.
- A—8 to 19 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; many fine roots throughout; common fine tubular pores; many distinct black (10YR 2/1) organic coats on faces of peds; slightly acid; clear smooth boundary.
- BA—19 to 25 inches; dark grayish brown (10YR 4/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate very fine and fine subangular blocky structure; friable; many fine roots throughout; common fine tubular pores; common distinct very dark gray (10YR 3/1) organic coats on all faces of peds; slightly acid; clear smooth boundary.
- Btg1—25 to 34 inches; dark grayish brown (10YR 4/2) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; common fine roots throughout; common fine tubular pores; common very dark grayish brown (10YR 3/2) clay films on all faces of peds; few distinct very dark gray (10YR 3/1) organic coats on all faces of peds; few fine black (10YR 2/1) iron and manganese oxides; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- Btg2—34 to 44 inches; grayish brown (10YR 5/2) silty clay loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common fine roots throughout; common fine tubular pores; common dark grayish brown (10YR 4/2) clay films on faces of peds; few fine black (10YR 2/1) iron and manganese oxides; common medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- BCg—44 to 52 inches; grayish brown (10YR 5/2) silty clay loam; weak medium prismatic structure; friable; few fine roots throughout; common fine tubular pores; few fine black (10YR 2/1) iron and manganese oxides; common medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—52 to 71 inches; light brownish gray (2.5Y 5/2) silt loam; massive; friable; few fine black (10YR 2/1) iron and manganese oxides; common fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; neutral; clear wavy boundary.
- 2C—71 to 80 inches; light yellowish brown (2.5Y 6/3) sand; single grain; loose; few fine black (10YR 2/1) iron and manganese oxides; many coarse prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

BA, Btg, and BC horizons:

Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam
Reaction—moderately acid to neutral

C horizon:

Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

2C horizon (if it occurs):

Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—loamy sand, sand, gravelly loamy sand, or gravelly sand
Reaction—moderately acid to neutral

Nodaway Series

Typical Pedon

Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded, in a wooded pasture; in Iowa County, Iowa; 330 feet west and 2,500 feet north of the southeast corner of sec. 34, T. 79 N., R. 9 W.; USGS Amish topographic quadrangle; lat. 41 degrees 36 minutes 27.3 seconds N. and long. 91 degrees 52 minutes 22 seconds W., NAD 83:

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine and medium roots throughout; common very fine tubular pores; neutral; abrupt smooth boundary.
- C1—7 to 38 inches; stratified brown (10YR 4/3), dark grayish brown (10YR 4/2), and dark brown (10YR 3/3) silt loam; massive with weak thin alluvial stratification; friable; many very fine roots throughout; common very fine tubular pores; common faint very dark grayish brown (10YR 3/2) organic coats on faces of peds; neutral; gradual smooth boundary.
- C2—38 to 54 inches; stratified brown (10YR 4/3) and dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; common very fine roots throughout; common very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.
- Cg—54 to 80 inches; stratified grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), and brown (10YR 4/3) silt loam; massive with weak thin alluvial stratification; friable; few very fine roots throughout; common very fine tubular pores; common

fine and medium prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Depth to buried soil: More than 40 inches

A or Ap horizon:

Hue—10YR

Value—3

Chroma—1 or 2

Texture—silt loam or silty clay loam

Reaction—slightly acid or neutral

C horizon:

Hue—10YR

Value—3 to 5

Chroma—1 to 4

Texture—silt loam or silty clay loam or stratified with these textures

Reaction—slightly acid or neutral

Osco Series

Typical Pedon

Osco silt loam, on a south-facing slope of 3 percent, in a cultivated field; in Carroll County, Illinois; about 3.5 miles east and 3.25 miles south of Lanark; 88 feet west and 316 feet north of the southeast corner of sec. 23, T. 24 N., R. 6 E.; USGS Lanark topographic quadrangle; lat. 42 degrees 03 minutes 13.4 seconds N. and long. 89 degrees 45 minutes 48.2 seconds W.; NAD 27:

- Ap—0 to 10 inches; very dark brown (10YR 2/2) and black (10YR 2/1) silt loam, very dark grayish brown (10YR 3/2) dry; moderate fine granular structure; friable; slightly acid; clear smooth boundary.
- A—10 to 14 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium to coarse granular structure; friable; strongly acid; clear smooth boundary.
- BA—14 to 20 inches; dark yellowish brown (10YR 3/4) and dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; many roots; few distinct light brownish gray (10YR 6/2) (dry) silt coats (clay depletions) on faces of ped; common earthworm casts and holes; strongly acid; clear smooth boundary.
- Bt1—20 to 26 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common faint dark brown (10YR 3/3) clay films; few distinct gray (10YR 6/1) (dry) silt coats (clay depletions) on faces of ped; strongly acid; clear smooth boundary.
- Bt2—26 to 37 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; many faint dark yellowish brown (10YR 4/4) clay films; common distinct light brownish gray (10YR 6/2) (dry) silt coats (clay depletions) on faces of ped; many very dark gray (N 3/) and dark brown (7.5YR 3/2) redoximorphic concretions (iron and manganese oxides); common fine faint brown (10YR 5/3) and common medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; strongly acid; clear smooth boundary.
- Bt3—37 to 45 inches; light yellowish brown (10YR 6/4) silty clay loam; moderate coarse subangular blocky structure; friable; many faint dark yellowish brown (10YR

4/4) clay films on faces of peds; many prominent dark brown (7.5YR 3/2) redoximorphic concretions (iron and manganese oxides); common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; few medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; strongly acid; gradual smooth boundary.

BC—45 to 55 inches; yellowish brown (10YR 5/4) and brown (10YR 4/3) silty clay loam; weak coarse angular blocky structure; friable; few fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; strongly acid; gradual smooth boundary.

C—55 to 60 inches; yellowish brown (10YR 5/4 and 5/6) and brown (10YR 4/3) silt loam; massive with some vertical partings; friable; many fine distinct grayish brown (10YR 5/2) redoximorphic depletions; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches

Depth to carbonates: More than 48 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam or silty clay loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—10YR

Value—4 to 6

Chroma—3 or 4

Texture—silty clay loam; subhorizons of silt loam in the upper or lower part in some pedons

Reaction—strongly acid or moderately acid

BC, C, or Cg horizon:

Hue—10YR; 2.5Y below a depth of 40 inches in some pedons

Value—4 or 5

Chroma—2 to 6

Texture—silt loam or silty clay loam

Reaction—strongly acid to neutral

Taxadjunct features: The representative pedon for the moderately eroded Osco soil (mapped as a minor component in map unit 120C2) is a taxadjunct because the surface layer does not meet the thickness requirements for Mollisols. This pedon is classified as a fine-silty, mixed, superactive, mesic Mollic Hapludalf.

Otley Series

Typical Pedon

Otley silty clay loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 295 feet east and 85 feet north of the southwest corner of sec. 1, T. 79 N., R. 11 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 40 minutes 22.9 seconds N. and long. 92 degrees 05 minutes 09.6 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, gray (10YR 5/1) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.

- A1—7 to 13 inches; very dark brown (10YR 2/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; moderately acid; clear smooth boundary.
- A2—13 to 18 inches; brown (10YR 3/3) silty clay loam, brown (10YR 5/3) dry; moderate fine subangular blocky structure; friable; few fine roots; few fine tubular pores; common very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; gradual smooth boundary.
- Bt1—18 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; few fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds and on surfaces along pores; few fine irregular masses of iron-manganese; strongly acid; gradual smooth boundary.
- Bt2—24 to 31 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; firm; few fine roots; few fine tubular pores; common fine distinct brown (10YR 5/3) clay films on faces of peds; few fine irregular masses of iron-manganese; few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Bt3—31 to 42 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few fine tubular pores; few distinct brown (10YR 5/3) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct grayish brown (2.5Y 5/2) redoximorphic depletions; moderately acid; gradual smooth boundary.
- Btg—42 to 62 inches; grayish brown (2.5Y 5/2) silty clay loam; weak coarse subangular blocky structure; friable; few fine irregular masses of iron-manganese; many fine prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Cg—62 to 80 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; few fine irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

Depth to carbonates: More than 72 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture—silty clay loam

Reaction—strongly acid to slightly acid

Bt horizon (upper part):

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silty clay

Reaction—strongly acid or moderately acid

Bt horizon (lower part):

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 to 4

Texture—silty clay loam

Reaction—strongly acid to slightly acid

C horizon:

Hue—10YR, 2.5Y, or 5Y

Value—5 or 6

Chroma—2 to 8

Texture—silty clay loam or silt loam

Reaction—moderately acid to neutral

Taxadjunct features: The representative pedons for the moderately eroded Otley soils in map units 24C2, 24E2, 24E3, 93D2, 192D2, 281C, 281C2, 281D2, 281D3, 281E2, and 876C2 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These pedons are classified as fine, smectitic, mesic Mollic Oxyaquic Hapludalfs. The representative pedons for the severely eroded Otley soils in map units 24D3, 93D3, 281C2, 281D2, 281D3, and 281E2 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These pedons are classified as fine, smectitic, mesic Oxyaquic Hapludalfs.

Pillot Series***Typical Pedon***

Pillot silt loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 525 feet east and 690 feet north of the southwest corner of sec. 11, T. 80 N., R. 9 W.; USGS Oxford topographic quadrangle; lat. 41 degrees 44 minutes 47.7 seconds N. and long. 91 degrees 52 minutes 07.7 seconds W., NAD 83:

- Ap—0 to 7 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine and medium granular structure; friable; many fine and medium roots throughout; common very fine tubular pores; neutral; abrupt smooth boundary.
- A1—7 to 16 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; friable; many very fine roots throughout; many very fine tubular pores; slightly acid; clear smooth boundary.
- A2—16 to 19 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium subangular blocky structure; friable; common very fine roots throughout; many very fine tubular pores; moderately acid; clear smooth boundary.
- Bt—19 to 31 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots throughout; many very fine tubular pores; few dark grayish brown (10YR 4/2) clay films on faces of peds; moderately acid; clear smooth boundary.
- 2BC—31 to 35 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; very friable; common very fine roots throughout; many very fine tubular pores; few brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
- 2C1—35 to 49 inches; dark yellowish brown (10YR 4/4) loamy sand; single grain; loose; few very fine roots throughout; moderately acid; gradual smooth boundary.
- 2C2—49 to 80 inches; yellowish brown (10YR 5/4) sand; single grain; loose; moderately acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture—silt loam
Reaction—moderately acid to neutral

Bt horizon:

Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 or 4
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

2BC horizon:

Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture—sandy clay loam, loam, clay loam, or sandy loam
Reaction—moderately acid to neutral

2C horizon:

Hue—10YR
Value—4 to 6
Chroma—4 to 6
Texture—loamy sand, loamy fine sand, or sand
Reaction—moderately acid to neutral

Taxadjunct features: The representative pedons for the moderately eroded Pillot soils in map units 1442C2, 1442D2, and 1442E2 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These soils are classified as fine-silty over sandy or sandy-skeletal, mixed, superactive, mesic Mollic Hapludalfs.

Quiver Series

Typical Pedon

Quiver silt loam, in an area of Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded, in a wooded pasture; in Iowa County, Iowa; 1,300 feet north and 1,880 feet east of the southwest corner of sec. 23, T. 81 N., R. 11 W.; USGS Marengo topographic quadrangle; lat. 41 degrees 48 minutes 28.1 seconds N. and long. 92 degrees 05 minutes 47.5 seconds W., NAD 83:

A—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; many fine and medium roots; common very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; slightly acid; clear smooth boundary.

Cg1—9 to 16 inches; dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; common very fine roots; common very fine tubular pores; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; neutral; clear smooth boundary.

Cg2—16 to 29 inches; stratified dark gray (2.5Y 4/1), dark grayish brown (10YR 4/2), and brown (10YR 4/3) silt loam; massive with weak thin alluvial stratification; friable; common very fine roots; common very fine tubular pores; few distinct very dark gray (10YR 3/1) organic coats on faces of peds; common fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; neutral; clear smooth boundary.

Cg3—29 to 63 inches; stratified dark grayish brown (2.5Y 4/2 and 10YR 4/2) and brown (10YR 4/3) silt loam; massive with weak thin alluvial stratification; friable; few very fine roots; few very fine tubular pores; few distinct very dark gray (10YR

3/1) organic coats on faces of peds; common fine distinct dark yellowish brown (10YR 4/6) redoximorphic concentrations; slightly alkaline; gradual smooth boundary.

Ab—63 to 80 inches; very dark gray (10YR 3/1) silt loam; weak medium subangular blocky structure; friable; common very fine tubular pores; common fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; slightly alkaline.

Range in Characteristics

Depth to carbonates: More than 60 inches

Depth to buried soil: More than 60 inches

A horizon:

Hue—10YR, 2.5Y, or N

Value—2 or 3

Chroma—0 to 2

Texture—silt loam or silty clay loam

Reaction—slightly acid to moderately alkaline

Cg horizon:

Hue—10YR, 2.5Y, 5Y, or N

Value—3 to 6

Chroma—0 to 2

Texture—silt loam or silty clay loam or stratified with these textures

Reaction—slightly acid to moderately alkaline

Ab horizon:

Hue—10YR, 2.5Y, or N

Value—2 or 3

Chroma—0 to 2

Texture—silt loam or silty clay loam

Reaction—slightly acid to moderately alkaline

Rozetta Series

Typical Pedon

Rozetta silt loam, on a northeast-facing slope of 1 percent, in an area of mixed hardwoods; in Stephenson County, Illinois; about 5 miles west of Eleroy; 150 feet south and 500 feet east of the center of sec. 18, T. 27 N., R. 6 E.; USGS Pearl City topographic quadrangle; elevation 890 feet; lat. 42 degrees 20 minutes 00 seconds N. and long. 89 degrees 51 minutes 19 seconds W., NAD 27:

A—0 to 4 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 6/1) dry; weak medium granular structure; friable; many roots; moderately acid; clear wavy boundary.

E—4 to 11 inches; dark grayish brown (10YR 4/2) silt loam; weak medium platy structure; friable; many roots; strongly acid; clear smooth boundary.

BE—11 to 14 inches; brown (10YR 4/3) silty clay loam; weak medium subangular blocky structure; firm; many roots; few faint brown (10YR 5/3) (dry) clay depletions on faces of peds; strongly acid; clear smooth boundary.

Bt1—14 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; many roots; many faint brown (10YR 5/3) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—21 to 39 inches; brown (10YR 5/3) silty clay loam; moderate medium and coarse subangular blocky structure; firm; common roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common faint pale brown (10YR 6/3) (dry) clay depletions on faces of peds; common medium faint light yellowish brown (10YR 6/4) and brown (10YR 4/3) masses of iron and manganese accumulation in

the matrix; few medium faint grayish brown (10YR 5/2) iron depletions in the matrix in the lower part of the horizon; strongly acid; clear smooth boundary.

Bt3—39 to 50 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse subangular blocky structure; firm; common roots; few faint brown (10YR 4/3) clay films on faces of peds; common medium faint pale brown (10YR 6/3) and common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; clear smooth boundary.

C—50 to 60 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common medium distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; moderately acid in the upper part; neutral in the lower part.

Range in Characteristics

Depth to carbonates: More than 60 inches

Other features: Some pedons in eroded areas do not have an E horizon.

Ap or A horizon:

Hue—10YR

Value—3 to 5

Chroma—1 to 3

Texture—silt loam or silty clay loam

Reaction—very strongly acid to neutral

E horizon:

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 or 3

Texture—silt loam

Reaction—very strongly acid to moderately acid

Bt horizon:

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—silty clay loam

Reaction—very strongly acid to neutral

C horizon:

Hue—10YR

Value—4 to 6

Chroma—2 to 6

Texture—silt loam or silty clay loam

Reaction—moderately acid to moderately alkaline

Seaton Series

Typical Pedon

Seaton silt loam, 18 to 25 percent slopes, moderately eroded, in a CRP field; in Iowa County, Iowa; 100 feet south and 2,100 feet east of the northwest corner of sec. 11, T. 81 N., R. 10 W.; USGS Amana topographic quadrangle; lat. 41 degrees 50 minutes 47.2 seconds N. and long. 91 degrees 59 minutes 11.2 seconds W., NAD 83:

Ap—0 to 5 inches; brown (10YR 4/3) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; very friable; many fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

BE—5 to 8 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; weak medium platy structure parting to weak fine subangular

blocky; very friable; many fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

Bt1—8 to 17 inches; dark yellowish brown (10YR 4/4) silt loam; weak very fine and fine subangular blocky structure; very friable; common fine roots; common fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—17 to 31 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; very friable; common fine roots; common fine tubular pores; common distinct brown (10YR 5/3) clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt3—31 to 48 inches; yellowish brown (10YR 5/4) silt loam; weak medium and coarse subangular blocky structure; very friable; common fine roots; common fine tubular pores; few faint yellowish brown (10YR 5/4) clay films on faces of peds; moderately acid; clear smooth boundary.

BC—48 to 60 inches; yellowish brown (10YR 5/4) silt loam; weak medium and coarse prismatic structure; very friable; few fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

C—60 to 80 inches; yellowish brown (10YR 5/6) silt loam; massive; very friable; common fine tubular pores; few fine distinct strong brown (7.5YR 5/8) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR

Value—2 to 5

Chroma—2 or 3

Texture—silt loam or silt

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture—silt loam or silt

Reaction—moderately acid to neutral

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 to 6

Texture—silt loam

Reaction—very strongly acid to neutral

BC horizon:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—3 or 4

Texture—silt loam

Reaction—strongly acid to neutral

C horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—2 to 6

Texture—silt loam or silt

Reaction—moderately acid to moderately alkaline

Shelby Series

Typical Pedon

Shelby loam, 9 to 14 percent slopes, moderately eroded, in a cultivated field; in Iowa County, Iowa; 1,600 feet south and 50 feet west of the northeast corner of sec. 35, T. 80 N., R. 11 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 41 minutes 52.1 seconds N. and long. 92 degrees 05 minutes 07.7 seconds W., NAD 83:

- Ap—0 to 8 inches; about 80 percent very dark grayish brown (10YR 3/2) and 20 percent brown (10YR 3/3) loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common fine roots; common very fine tubular pores; neutral; abrupt smooth boundary.
- BA—8 to 14 inches; dark brown (10YR 4/3) clay loam; weak fine subangular blocky structure parting to weak fine granular; friable; common very fine roots; common very fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; slightly acid; clear smooth boundary.
- Bt1—14 to 23 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; common distinct dark brown (10YR 3/3) organic coats on faces of peds; moderately acid; gradual smooth boundary.
- Bt2—23 to 33 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; slightly acid; gradual smooth boundary.
- Bt3—33 to 42 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; few distinct brown (10YR 4/3) clay films on faces of peds; slightly acid; abrupt smooth boundary.
- C1—42 to 48 inches; yellowish brown (10YR 5/6) clay loam; massive; firm; few very fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.
- C2—48 to 62 inches; about 80 percent yellowish brown (10YR 5/6) and 20 percent grayish brown (10YR 5/2) clay loam; massive; firm; few very fine tubular pores; strongly effervescent; moderately alkaline; gradual smooth boundary.
- C3—62 to 80 inches; about 90 percent yellowish brown (10YR 5/6) and 10 percent grayish brown (10YR 5/2) clay loam; massive; firm; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

Depth to carbonates: More than 30 inches

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—loam, clay loam, or silt loam

Reaction—strongly acid to neutral

AB horizon (if it occurs):

Hue—10YR

Value—2 or 3
 Chroma—2 or 3
 Texture—loam, clay loam, or silt loam
 Reaction—strongly acid to neutral

Bt horizon or BA horizon (if it occurs):

Hue—10YR
 Value—3 to 5
 Chroma—3 to 6
 Texture—clay loam
 Reaction—strongly acid to neutral

BC horizon or C horizon (if it occurs):

Hue—10YR or 2.5Y
 Value—4 to 6
 Chroma—2 to 6
 Texture—clay loam, loam, or sandy clay loam
 Reaction—neutral to moderately alkaline

Taxadjunct features: The representative pedons for the severely eroded Shelby soils in map units 24D3, 24E3, 93D3, 192D3, and 281D3 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These pedons are classified as fine-loamy, mixed, superactive, mesic Typic Hapludalfs.

Sparta Series

Typical Pedon

Sparta loamy fine sand, 2 to 5 percent slopes, in a wooded pasture; in Iowa County, Iowa; 1,320 feet east and 120 feet north of the southwest corner of sec. 1, T. 80 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 45 minutes 33.2 seconds N. and long. 91 degrees 51 minutes 05.7 seconds W., NAD 83:

A—0 to 14 inches; very dark grayish brown (10YR 3/2) loamy fine sand, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; common fine roots; slightly acid; gradual smooth boundary.
 Bw1—14 to 36 inches; brown (10YR 4/3) fine sand; single grain; loose; moderately acid; gradual smooth boundary.
 Bw2—36 to 50 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; moderately acid; clear smooth boundary.
 E and Bt—50 to 68 inches; yellowish brown (10YR 5/6) fine sand; single grain; loose; strong brown (7.5YR 5/6) bands of loamy fine sand $\frac{1}{8}$ to $\frac{1}{2}$ inch thick at depths of 50, 58, and 68 inches; moderately acid; clear smooth boundary.
 C—68 to 80 inches; yellowish brown (10YR 5/6) fine sand; loose; moderately acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches

Depth to carbonates: More than 80 inches

A horizon:

Hue—7.5YR or 10YR
 Value—2 or 3
 Chroma—1 or 2
 Texture—loamy fine sand, loamy sand, or sand
 Reaction—neutral to strongly acid

AB horizon (if it occurs):

Hue—7.5YR or 10YR
 Value—2 or 3
 Chroma—2 or 3
 Texture—loamy fine sand, loamy sand, or sand
 Reaction—slightly acid to strongly acid

Bw horizon:

Hue—7.5YR or 10YR
 Value—3 to 6
 Chroma—3 to 6
 Texture—fine sand or loamy fine sand
 Reaction—slightly acid to strongly acid

E part of the E and Bt horizon:

Hue—7.5YR or 10YR
 Value—5 or 6
 Chroma—3 or 4
 Texture—fine sand or sand
 Reaction—slightly acid to strongly acid

Bt (lamellae) part of the E and Bt horizon:

Hue—7.5YR or 10YR
 Value—3 to 5
 Chroma—3 to 6
 Texture—loamy sand, loamy fine sand, or fine sand
 Reaction—slightly acid to strongly acid

C horizon (if it occurs):

Hue—7.5YR or 10YR
 Value—4 to 6
 Chroma—3 to 6
 Texture—fine sand or sand
 Reaction—strongly acid to slightly alkaline

Sperry Series***Typical Pedon***

Sperry silt loam, 0 to 1 percent slopes, depressional, in a cultivated field; in Iowa County, Iowa; 1,290 feet north and 1,350 feet west of the southeast corner of sec. 21, T. 80 N., R. 10 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 43 minutes 13 seconds N. and long. 92 degrees 00 minutes 46 seconds W., NAD 83:

- Ap—0 to 10 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; few fine roots; common fine tubular pores; neutral; abrupt smooth boundary.
- E1—10 to 13 inches; dark gray (10YR 4/1) silt loam, gray (10YR 6/1) dry; weak thick platy structure parting to weak fine subangular blocky; friable; few fine roots; common fine tubular pores; few fine distinct brown (10YR 4/4) redoximorphic concentrations; slightly acid; clear smooth boundary.
- E2—13 to 19 inches; gray (10YR 5/1) silt loam, light gray (10YR 7/1) dry; weak thick platy structure; friable; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- Btg1—19 to 29 inches; dark gray (10YR 4/1) silty clay; moderate fine subangular blocky structure; firm; few fine roots; common fine tubular pores; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine very dark brown (7.5YR

2.5/2) irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6 and 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Btg2—29 to 38 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; few very fine tubular pores; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine very dark brown (7.5YR 2.5/2) irregular masses of iron-manganese; common fine prominent dark yellowish brown (10YR 5/6 and 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.

Btg3—38 to 42 inches; gray (10YR 4/1) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few very fine tubular pores; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine very dark brown (7.5YR 2.5/2) irregular masses of iron-manganese; common fine and medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/8) redoximorphic concentrations; slightly acid; clear smooth boundary.

BCg—42 to 50 inches; gray (5Y 5/1) silty clay loam; weak medium prismatic structure parting to weak coarse subangular blocky; firm; few fine roots; few fine vesicular pores; few fine very dark brown (7.5YR 2.5/2) irregular masses of iron-manganese; many medium and coarse prominent strong brown (7.5YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.

Cg1—50 to 70 inches; gray (5Y 5/1) silty clay loam; massive; firm; few fine very dark brown (7.5YR 2.5/2) irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; neutral; gradual smooth boundary.

Cg2—70 to 80 inches; gray (5Y 5/1) silt loam; massive; firm; few fine very dark brown (7.5YR 2.5/2) irregular masses of iron-manganese; common fine and medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 16 inches

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1

Texture—silt loam or silty clay loam

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—4 or 5

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

Btg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—3 to 5

Chroma—1

Texture—silty clay or silty clay loam

Reaction—moderately acid or slightly acid

BCg and Cg horizons:

Hue—2.5Y or 5Y

Value—5 or 6

Chroma—1 or 2

Texture—silty clay loam or silt loam (lower part)

Reaction—moderately acid to neutral

Stronghurst Series

Typical Pedon

Stronghurst silt loam, 0 to 2 percent slopes, in a CRP field; in Iowa County, Iowa; 1,470 feet west and 155 feet north of the southeast corner of sec. 6, T. 81 N., R. 10 W.; USGS Marengo topographic quadrangle; lat. 41 degrees 50 minutes 48.6 seconds N. and long. 92 degrees 02 minutes 40.9 seconds W., NAD 83:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, gray (10YR 6/2) dry; weak fine granular structure; friable; many fine roots; common fine tubular pores; neutral; abrupt smooth boundary.

E—8 to 12 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak thin platy structure parting to moderate fine subangular blocky; very friable; common fine roots; few fine tubular pores; many distinct pale brown (10YR 6/3) silt coats on faces of peds; moderately acid; abrupt smooth boundary.

BE—12 to 15 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine tubular pores; many distinct pale brown (10YR 6/3) silt coats on faces of peds; moderately acid; clear smooth boundary.

Bt—15 to 23 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many distinct pale brown (10YR 6/3) silt coats on faces of peds; few fine irregular masses of iron-manganese; moderately acid; gradual smooth boundary.

Btg1—23 to 34 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium and coarse subangular blocky structure; friable; common very fine roots; few fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.

Btg2—34 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; friable; few very fine roots; few fine tubular pores; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine irregular masses of iron-manganese; many fine and medium prominent yellowish brown (10YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.

BCg—50 to 62 inches; light brownish gray (10YR 6/2) silty clay loam; weak coarse prismatic structure; friable; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine irregular masses of iron-manganese; many fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Cg—62 to 80 inches; pale brown (10YR 6/3) silt loam; massive; friable; common fine irregular masses of iron-manganese; many fine and medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap horizon:

Hue—10YR

Value—3 to 6
 Chroma—1 or 2
 Texture—silt loam
 Reaction—strongly acid to neutral

E horizon:

Hue—10YR
 Value—4 to 6
 Chroma—2 or 3
 Texture—silt loam
 Reaction—strongly acid to neutral

BE horizon:

Hue—10YR
 Value—4 to 6
 Chroma—2 or 3
 Texture—silt loam or silty clay loam
 Reaction—strongly acid to neutral

Bt and/or Btg horizon:

Hue—10YR or 2.5Y
 Value—4 to 6
 Chroma—1 to 4
 Texture—silty clay loam or silt loam
 Reaction—strongly acid to neutral

BC or C horizon:

Hue—10YR or 2.5Y
 Value—4 to 6
 Chroma—1 to 4
 Texture—silty clay loam or silt loam
 Reaction—strongly acid to neutral

Taintor Series***Typical Pedon***

Taintor silty clay loam, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 1,490 feet west and 100 feet north of the southeast corner of sec. 21, T. 80 N., R. 10 W.; USGS Williamsburg topographic quadrangle; lat. 41 degrees 43 minutes 00 seconds N. and long. 92 degrees 00 minutes 44 seconds W., NAD 83:

- Ap—0 to 9 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; slightly acid; abrupt smooth boundary.
- A1—9 to 16 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine granular structure; friable; common fine roots; few fine tubular pores; slightly acid; gradual smooth boundary.
- A2—16 to 20 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; few fine roots; few fine tubular pores; slightly acid; clear smooth boundary.
- Btg1—20 to 25 inches; dark gray (10YR 4/1) silty clay loam; weak medium subangular blocky structure; firm; few fine roots; few fine tubular pores; common distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine irregular masses of iron-manganese; many fine distinct gray (5Y 5/1) redoximorphic depletions; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.

- Btg2—25 to 36 inches; dark gray (10YR 4/1) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine tubular pores; common distinct dark gray (5Y 4/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Btg3—36 to 47 inches; gray (10YR 5/1) silty clay loam; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; few fine tubular pores; common dark gray (5Y 4/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and common medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; common fine distinct grayish brown (2.5Y 5/2) redoximorphic depletions; slightly acid; gradual smooth boundary.
- BCg—47 to 58 inches; gray (10YR 5/1) silty clay loam; weak coarse prismatic structure; few dark gray (5Y 4/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent yellowish brown (10YR 5/6) and common medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- Cg1—58 to 67 inches; light brownish gray (2.5Y 6/2) silty clay loam; massive; friable; few fine irregular masses of iron-manganese; many fine and medium prominent strong brown (7.5YR 5/8) redoximorphic concentrations; neutral; gradual wavy boundary.
- Cg2—67 to 80 inches; light brownish gray (2.5Y 6/2) silt loam; massive; friable; few fine irregular masses of iron-manganese; many medium and coarse prominent strong brown (7.5YR 5/8) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 16 to 24 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR or N

Value—2 or 3

Chroma—0 or 1

Texture—silty clay loam or silt loam

Reaction—moderately acid or slightly acid

Btg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 or 5

Chroma—1 or 2

Texture—silty clay or silty clay loam

Reaction—moderately acid or slightly acid

BCg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 or 5

Chroma—1 or 2

Texture—silty clay loam

Reaction—moderately acid or slightly acid

Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 to 6

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—slightly acid to slightly alkaline

Tama Series

Typical Pedon

Tama silty clay loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 700 feet west and 80 feet south of the northeast corner of sec. 1, T. 80 N., R. 12 W.; USGS Ladora topographic quadrangle; lat. 41 degrees 46 minutes 30.7 seconds N. and long. 92 degrees 11 minutes 04.9 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; common distinct black (10YR 2/1) organic coats on faces of peds; slightly acid; abrupt smooth boundary.
- A—8 to 17 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; few fine roots; few fine tubular pores; common distinct very dark gray (10YR 3/1) organic coats on faces of peds; moderately acid; clear smooth boundary.
- BA—17 to 23 inches; brown (10YR 4/3) silty clay loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct dark gray (10YR 4/1) organic coats on faces of peds; moderately acid; clear smooth boundary.
- Bt1—23 to 32 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.
- Bt2—32 to 41 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; few fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; strongly acid; gradual smooth boundary.
- Bt3—41 to 47 inches; yellowish brown (10YR 5/4) silty clay loam; moderate coarse prismatic structure parting to weak coarse subangular blocky; friable; few fine roots; few fine tubular pores; common distinct brown (10YR 5/3) clay films on faces of peds; very few fine irregular masses of iron-manganese; strongly acid; gradual smooth boundary.
- BC—47 to 62 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse prismatic structure; friable; few distinct brown (10YR 5/3) clay films on faces of peds; very few fine irregular masses of iron-manganese; common fine and medium distinct yellowish brown (10YR 5/6) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- C—62 to 80 inches; yellowish brown (10YR 5/4) silty clay loam; massive; friable; few fine irregular masses of iron-manganese; common fine and medium distinct yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches

Depth to carbonates: More than 48 inches

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silty clay loam or silt loam
 Reaction—strongly acid to slightly acid

BA horizon:

Hue—10YR
 Value—3 or 4
 Chroma—2 or 3
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

Bt and BC horizons:

Hue—10YR
 Value—4 or 5
 Chroma—3 or 4
 Texture—silty clay loam
 Reaction—strongly acid to moderately acid

C horizon:

Hue—10YR
 Value—4 or 5
 Chroma—3 to 6
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

Taxadjunct features: The representative pedons for the severely eroded Tama soils in map units 120D2, 120D3, and 120E2 are taxadjuncts because the surface layer does not meet the thickness requirements for Mollisols. These pedons are classified as fine-silty, mixed, superactive, mesic Mollic Hapludalfs.

Tell Series

Typical Pedon

Tell silt loam, 2 to 5 percent slopes, in an area of timber; in Iowa County, Iowa; 2,600 feet north and 440 feet west of the southeast corner of sec. 3, T. 80 N., R. 10 W.; USGS Amana topographic quadrangle; lat. 41 degrees 46 minutes 01.2 seconds N. and long. 91 degrees 52 minutes 20.7 seconds W., NAD 83:

- A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.
- E—5 to 10 inches; brown (10YR 5/3) silt loam, pale brown (10YR 6/3) dry; weak thin and medium platy structure; friable; common very fine roots; moderately acid; clear smooth boundary.
- BE—10 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine and medium subangular blocky structure; friable; common very fine roots; strongly acid; clear smooth boundary.
- Bt—14 to 27 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; strongly acid; clear smooth boundary.
- 2BC—27 to 31 inches; yellowish brown (10YR 5/4) loam; weak fine and medium subangular blocky structure; friable; strongly acid; clear smooth boundary.
- 2C1—31 to 58 inches; brown (7.5YR 5/4) sand; single grain; loose; strongly acid; clear smooth boundary.

2C2—58 to 80 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR

Value—3 to 5

Chroma—2 to 5

Texture—silt loam

Reaction—strongly acid to slightly acid

E horizon:

Hue—10YR

Value—4 or 5

Chroma—2 to 4

Texture—silt loam

Reaction—strongly acid to slightly acid

BE horizon:

Hue—10YR

Value—3 to 5

Chroma—3 or 4

Texture—silt loam

Reaction—strongly acid to slightly acid

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

2BC horizon:

Hue—10YR or 7.5YR

Value—3 to 5

Chroma—3 to 6

Texture—loam, sandy loam, or sandy clay loam

Reaction—strongly acid to slightly acid

2C horizon:

Hue—10YR or 7.5YR

Value—4 or 5

Chroma—4 to 8

Texture—sand or loamy sand

Reaction—strongly acid to slightly acid

Timula Series

Typical Pedon

Timula silt loam, in an area of Seaton-Timula silt loams, 35 to 60 percent slopes, in a pasture; in Henderson County, Illinois; about 1,056 feet east and 176 feet south of the center of sec. 10, T. 10 N., R. 5 W.; USGS Gladstone topographic quadrangle; lat. 40 degrees 52 minutes 17 seconds N. and long. 90 degrees 56 minutes 50 seconds W., NAD 83:

- A—0 to 6 inches; dark brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many roots; slightly alkaline; clear smooth boundary.
- E—6 to 12 inches; yellowish brown (10YR 5/4) silt loam, light yellowish brown (10YR 6/4) dry; weak coarse granular structure; friable; many roots; slightly alkaline; clear smooth boundary.
- Bw1—12 to 18 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; many roots; slightly alkaline; gradual smooth boundary.
- Bw2—18 to 24 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; few roots; slightly alkaline; clear smooth boundary.
- C—24 to 60 inches; yellowish brown (10YR 5/4) silt loam; massive; very friable; few pale brown (10YR 6/3) deoxidized zones around root channels; few calcium carbonate concretions in the upper part; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 18 to 40 inches

Other features: In some pedons the E horizon has been incorporated into the Ap horizon.

Ap or A horizon:

Hue—10YR
Value—3 or 4
Chroma—1 to 3
Texture—silt loam
Reaction—slightly acid to slightly alkaline

E horizon:

Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Reaction—slightly acid to slightly alkaline

Bw horizon:

Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam
Reaction—slightly acid to slightly alkaline

BC, Bk, or C horizon:

Hue—10YR, 2.5Y, or 5Y
Value—5 or 6
Chroma—2 to 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Tuskeego Series

Typical Pedon

Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 3,150 feet north and 700 feet east of the southwest corner of sec. 4, T.

78 N., R. 12 W.; USGS Deep River topographic quadrangle; lat. 41 degrees 35 minutes 27.3 seconds N. and long. 92 degrees 15 minutes 23.2 seconds W., NAD 83:

- Ap—0 to 9 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; friable; common fine roots; common very fine tubular pores; slightly acid; abrupt smooth boundary.
- E1—9 to 16 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak thin platy structure; friable; common very fine roots; common very fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; common fine distinct dark yellowish brown (10YR 3/4) redoximorphic concentrations; slightly acid; clear smooth boundary.
- E2—16 to 25 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure parting to weak thin platy; friable; few very fine roots; common very fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; few fine distinct dark yellowish brown (10YR 3/4) redoximorphic concentrations; moderately acid; clear smooth boundary.
- Btg1—25 to 35 inches; dark gray (10YR 4/1) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; moderately acid; gradual smooth boundary.
- Btg2—35 to 46 inches; gray (2.5Y 5/1) silty clay; moderate fine and medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common distinct dark gray (2.5Y 4/1) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Btg3—46 to 58 inches; gray (2.5Y 5/1) silty clay; moderate medium subangular blocky structure; firm; common very fine tubular pores; common faint gray (2.5Y 5/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- Btg4—58 to 66 inches; gray (2.5Y 5/1) silty clay loam; moderate medium subangular blocky structure; firm; common very fine tubular pores; few distinct gray (2.5Y 5/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- BCg—66 to 80 inches; gray (2.5Y 5/1) silty clay loam; weak medium subangular blocky structure; friable; common very fine tubular pores; common fine irregular masses of iron-manganese; many medium and coarse strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 72 inches

Ap or A horizon:

Hue—10YR

Value—3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—4 to 6

Chroma—1 or 2

Texture—silt loam or silty clay loam
 Reaction—moderately acid or slightly acid

Bg horizon (if it occurs):

Hue—10YR
 Value—4 or 5
 Chroma—1 or 2
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

Btg horizon and BC horizon (if it occurs):

Hue—10YR or 2.5Y in the upper part; 2.5Y or 5Y in the lower part
 Value—4 or 5
 Chroma—1 or 2
 Texture—silty clay loam or silty clay
 Reaction—strongly acid to slightly acid

Udolpho Series

Typical Pedon

Udolpho loam, mapped as a minor component in an area of Hayfield silt loam, 0 to 2 percent slopes, rarely flooded, in a pasture; in Iowa County, Iowa; 2,600 feet south and 540 feet west of the northeast corner of sec. 11, T. 80 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 45 minutes 07.5 seconds N. and long. 91 degrees 51 minutes 25 seconds W., NAD 83:

- Ap—0 to 6 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; many fine roots; common very fine tubular pores; few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; slightly acid; abrupt smooth boundary.
- E—6 to 10 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak thin platy structure; friable; common fine roots; common very fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- BE—10 to 15 inches; grayish brown (10YR 5/2) loam; weak fine and medium subangular blocky structure; friable; common very fine roots; common very fine tubular pores; common fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.
- Btg—15 to 28 inches; gray (2.5Y 5/1) loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; common very fine tubular pores; common fine distinct dark gray (2.5Y 4/1) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- 2C1—28 to 34 inches; gray (2.5Y 5/1) loamy sand; single grain; loose; few very fine roots; common medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.
- 2C2—34 to 51 inches; dark grayish brown (2.5Y 4/2) sand; single grain; loose; common medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- 2C3—51 to 80 inches; gray (5Y 5/1) loamy sand; single grain; loose; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; very slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 36 to 66 inches

Depth to sandy material: 20 to 40 inches

Ap or A horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam, loam, or fine sandy loam

Reaction—moderately acid or slightly acid

E and BE horizons:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 or 2

Texture—silt loam, loam, or fine sandy loam

Reaction—moderately acid or slightly acid

Btg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 or 5

Chroma—1 or 2

Texture—silt loam or loam in the upper part; loam, sandy clay loam, or clay loam in the lower part

Reaction—strongly acid to slightly acid

2C horizon:

Hue—2.5Y or 5Y

Value—5 or 6

Chroma—1 to 6

Texture—loamy sand or sand

Reaction—moderately acid to slightly alkaline

Vesser Series***Typical Pedon***

Vesser silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 2,460 feet west and 2,000 feet south of the northeast corner of sec. 32, T. 79 N., R. 12 W.; USGS Deep River topographic quadrangle; lat. 41 degrees 36 minutes 37.5 seconds N. and long. 92 degrees 16 minutes 08.4 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common fine roots; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A—7 to 14 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; common very fine roots; common very fine tubular pores; slightly acid; clear smooth boundary.

E1—14 to 19 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure parting to weak thin platy; friable; common very fine roots; common very fine tubular pores; few fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.

E2—19 to 27 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak thin platy structure; friable; few very fine roots; common very

fine tubular pores; few fine prominent brown (7.5YR 5/6) redoximorphic concentrations; moderately acid; clear smooth boundary.

Btg1—27 to 33 inches; dark gray (10YR 4/1) silty clay loam; weak fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; common distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Btg2—33 to 44 inches; dark gray (10YR 4/1) silty clay loam; moderate fine subangular blocky structure; firm; common very fine tubular pores; common distinct very dark gray (10YR 3/1) clay films on faces of peds; few fine irregular masses of iron-manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.

Btg3—44 to 50 inches; gray (10YR 5/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common very fine tubular pores; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine irregular masses of iron-manganese; many medium prominent brown (7.5YR 4/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

BCg—50 to 63 inches; grayish brown (10YR 5/2) silty clay loam; weak medium prismatic structure; firm; few very fine tubular pores; few distinct gray (10YR 5/1) clay films on faces of peds; common fine irregular masses of iron-manganese; many fine and medium distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Cg—63 to 80 inches; grayish brown (10YR 5/2) silt loam; massive; friable; common fine irregular masses of iron-manganese; many fine and medium distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly acid.

Range in Characteristics

Depth to carbonates: More than 72 inches

Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid or slightly acid

E horizon:

Hue—10YR

Value—3 to 5

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid or slightly acid

Btg horizon:

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—1 or 2

Texture—silty clay loam

Reaction—strongly acid to slightly acid

BCg and Cg horizons:

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 or 2

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

Wabash Series

Typical Pedon

Wabash silty clay, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 2,440 feet east and 2,350 feet south of the northwest corner of sec. 31, T. 78 N., R. 9 W.; USGS Holbrook topographic quadrangle; lat. 41 degrees 31 minutes 08.6 seconds N. and long. 91 degrees 56 minutes 13.2 seconds W., NAD 83:

Ap—0 to 8 inches; black (10YR 2/1) silty clay, very dark gray (10YR 3/1) dry; weak fine and medium granular structure; firm; common fine roots throughout; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A—8 to 21 inches; black (N 2.5/) silty clay, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; firm; few very fine roots throughout; common very fine tubular pores; neutral; clear smooth boundary.

Bg1—21 to 40 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; strong fine and medium subangular blocky structure; firm; few very fine roots throughout; common very fine tubular pores; common pressure faces; few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; neutral; clear smooth boundary.

Bg2—40 to 51 inches; dark gray (5Y 4/1) silty clay; moderate medium subangular blocky structure; very firm; few very fine tubular pores; common pressure faces; few fine black (10YR 2/1) iron and manganese oxides; many medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) redoximorphic concentrations; neutral; clear smooth boundary.

Bg3—51 to 71 inches; dark gray (5Y 4/1) silty clay; moderate coarse subangular blocky structure; very firm; few very fine tubular pores; common pressure faces; few fine (10YR 2/1) iron and manganese oxides; common medium prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) redoximorphic concentrations; neutral; mixed, 70 percent black (10YR 2/1) and very dark gray (2.5Y 3/1) band 3 inches thick occurring between the depths of 57 and 60 inches; gradual smooth boundary.

Cg—71 to 80 inches; gray (5Y 5/1) silty clay; massive; firm; few very fine tubular pores; few pressure faces; few fine (10YR 2/1) iron and manganese oxides; common medium prominent strong brown (7.5YR 4/4) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 40 inches

Thickness of the mollic epipedon: More than 36 inches

Other features: Some pedons have overwash of silt loam or silty clay loam.

Ap and A horizons:

Hue—10YR, 2.5Y, 5Y, or N

Value—2 or 3

Chroma—0 to 2

Texture—silty clay or clay

Reaction—strongly acid to neutral

Bg horizon:

Hue—10YR, 2.5Y, 5Y, or N

Value—2 to 5

Chroma—0 to 2

Texture—silty clay or clay

Reaction—strongly acid to neutral

Cg horizon:

Hue—10YR, 2.5Y, or 5Y

Value—4 or 5

Chroma—1 or 2

Texture—silty clay or clay

Reaction—strongly acid to slightly alkaline

Walford Series***Typical Pedon***

Walford silt loam, terrace, 0 to 2 percent slopes, in a cultivated field; in Iowa County, Iowa; 520 feet west and 740 feet north of the southeast corner of sec. 21, T. 81 N., R. 9 W.; USGS Middle Amana topographic quadrangle; lat. 42 degrees 14 minutes 23 seconds N. and long. 91 degrees 38 minutes 41 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; many fine roots throughout; many fine tubular pores; few distinct very dark brown (10YR 2/2) organic coats on all faces of peds; neutral; abrupt smooth boundary.
- E—8 to 12 inches; grayish brown (10YR 5/2) silt loam, light brownish gray (10YR 6/2) dry; weak thin platy structure; friable; many fine roots throughout; many fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coats on all faces of peds; few distinct light gray (10YR 7/2) silt coats on all faces of peds; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; abrupt smooth boundary.
- Bg—12 to 19 inches; light grayish brown (10YR 6/2) silty clay loam; moderate fine subangular blocky structure; friable; many fine roots throughout; many fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; few distinct light gray (10YR 7/2) silt coats on all faces of peds; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; few fine faint gray (10YR 6/1) redoximorphic depletions; strongly acid; clear smooth boundary.
- Btg1—19 to 29 inches; light grayish brown (10YR 6/2) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; many fine roots throughout; many fine tubular pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/2) silt coats on all faces of peds; many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; few fine faint gray (10YR 6/1) redoximorphic depletions; strongly acid; clear smooth boundary.
- Btg2—29 to 44 inches; light grayish brown (2.5Y 6/2) silty clay loam; weak medium prismatic structure parting to moderate fine subangular blocky; friable; few fine roots throughout; few fine tubular pores; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; very few distinct very dark gray (10YR 3/1) organic coats on faces of peds; few distinct light gray (10YR 7/2) silt coats on faces of peds; common black (10YR 2/1) iron and manganese concretions; many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- BCg—44 to 55 inches; light grayish brown (2.5Y 6/2) silt loam; weak medium prismatic structure; friable; common black (10YR 2/1) iron and manganese concretions; many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly acid; gradual smooth boundary.
- Cg—55 to 80 inches; light grayish brown (2.5Y 6/2) and strong brown (7.5YR 5/6) silt loam; massive; friable; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

A or Ap horizon:

Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Reaction—strongly acid to neutral

E horizon:

Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Reaction—strongly acid to neutral

Bg or Btg horizon:

Hue—10YR to 5Y
Value—5 or 6
Chroma—1 or 2
Texture—silty clay loam
Reaction—strongly acid to neutral

BCg horizon:

Hue—2.5Y or 5Y
Value—5 or 6
Chroma—1 or 2
Texture—silty clay loam
Reaction—strongly acid to neutral

Cg horizon:

Hue—2.5Y or 5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam
Reaction—strongly acid to neutral

Watkins Series***Typical Pedon***

Watkins silt loam, 2 to 5 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 2,330 feet east and 200 feet south of the northwest corner of sec. 33, T. 81 N., R. 10 W.; USGS Marengo topographic quadrangle; lat. 41 degrees 47 minutes 17.6 seconds N. and long. 92 degrees 01 minute 02.9 seconds W., NAD 83:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine granular structure; friable; moderately acid; clear smooth boundary.

E—7 to 12 inches; about 90 percent very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) silt loam, gray (10YR 6/1) dry; weak thick platy structure parting to weak fine subangular blocky; friable; about 10 percent brown (10YR 4/3) peds from BE horizon; common distinct light gray (10YR 7/1) (dry) coats of silt and very fine sand on faces of peds; moderately acid; gradual smooth boundary.

BE—12 to 18 inches; about 85 percent brown (10YR 4/3) and 15 percent dark yellowish brown (10YR 4/4) silt loam; moderate fine subangular blocky structure; friable; few distinct light gray (10YR 7/1) (dry) coats of silt and very fine sand on

faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coats on faces of peds; moderately acid; clear smooth boundary.

Bt1—18 to 29 inches; brown (10YR 4/3) silty clay loam; weak fine prismatic structure parting to moderate medium subangular and angular blocky; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) coats of silt and very fine sand on faces of peds; slightly acid; gradual smooth boundary.

Bt2—29 to 35 inches; brown (10YR 4/3) silty clay loam; weak coarse prismatic structure parting to moderate coarse subangular and angular blocky; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) coats of silt and very fine sand on faces of peds; few fine very dark brown (10YR 2/2) concretions (oxides); few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Bt3—35 to 52 inches; brown (10YR 4/3) silty clay loam; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) coats of silt and very fine sand on faces of peds; few fine black (N 2/) concretions (oxides); moderately acid; gradual smooth boundary.

C—52 to 80 inches; brown (10YR 5/3) silty clay loam; massive; few fine black (N 2/) concretions (oxides); friable; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations and few fine prominent gray (5Y 6/1) redoximorphic depletions; moderately acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Ap or A horizon:

Hue—10YR

Value—3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—3 or 4

Chroma—2

Texture—silt loam

Reaction—moderately acid to neutral

BE horizon (if it occurs):

Hue—10YR

Value—4

Chroma—3 or 4

Texture—silt loam or silty clay loam

Reaction—strongly acid to slightly acid

Bt horizon (upper part):

Hue—10YR

Value—4

Chroma—3 or 4

Texture—silty clay loam

Reaction—strongly acid to slightly acid

Bt horizon (lower part) and BC horizon (if it occurs):

Hue—10YR or 2.5Y

Value—4 to 6
 Chroma—2 to 6
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

C horizon:

Hue—10YR or 2.5Y
 Value—4 to 6
 Chroma—2 to 6
 Texture—silty clay loam; thin strata of loam, sandy loam, or loamy sand at a depth of more than 40 inches in some pedons
 Reaction—moderately acid or slightly acid

2C horizon (if it occurs) (below a depth 60 inches):

Hue—10YR or 2.5Y
 Value—4 to 6
 Chroma—2 to 6
 Texture—sand, loamy sand, or gravelly sand
 Reaction—moderately acid or slightly acid

Waubee Series

Typical Pedon

Waubee silt loam, 2 to 5 percent slopes, in a cultivated field; in Iowa County, Iowa; 956 feet north and 1,404 feet west of the southeast corner of sec. 12, T. 81 N., R. 9 W.; USGS Amana topographic quadrangle; lat. 41 degrees 50 minutes 04.9 seconds N. and long. 91 degrees 50 minutes 10.4 seconds W., NAD 83:

- Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; neutral; abrupt smooth boundary.
- E—7 to 13 inches; brown (10YR 4/3) and dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium platy and weak fine subangular blocky structure; friable; many silt coats; few very dark grayish brown (10YR 3/2) wormcasts; slightly acid; gradual smooth boundary.
- Bt1—13 to 19 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; common distinct clay films; common light gray (10YR 7/1) silt coats; few very fine very dark brown (10YR 2/2) accumulations (oxides); moderately acid; clear smooth boundary.
- Bt2—19 to 29 inches; brown (10YR 5/3) silty clay loam; moderate fine angular and subangular blocky structure; friable; common distinct clay films; common silt coats; few medium sand grains in the lower part; common fine very dark brown (10YR 2/2) accumulations (oxides); few fine prominent yellowish brown (10YR 5/8) and few fine faint brown (7.5YR 4/4) redoximorphic concentrations in the lower part; moderately acid; clear smooth boundary.
- 2Bt3—29 to 34 inches; strong brown (7.5YR 5/6) loam; moderate medium subangular and angular blocky structure; friable; very few distinct clay films; distinct silt coats; common fine very dark brown (10YR 2/2) accumulations (oxides); few fine prominent grayish brown (10YR 5/2) redoximorphic depletions; about 5 percent pebbles; strongly acid; gradual smooth boundary.
- 2BC—34 to 45 inches; strong brown (7.5YR 5/6) loam; weak coarse prismatic structure parting to weak coarse subangular and angular blocky; firm; few distinct clay films on surfaces along root channels; common fine very dark brown (10YR 2/2) accumulations (oxides); few fine faint yellowish red (5YR 4/6) redoximorphic concentrations; many fine and medium prominent grayish brown (10YR 5/2)

redoximorphic depletions; about 5 percent pebbles; strongly acid; gradual smooth boundary.

2C1—45 to 57 inches; yellowish brown (10YR 5/4) loam; massive; firm; few very dark brown (10YR 2/2) accumulations (oxides); few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; many fine and medium distinct grayish brown (10YR 5/2) redoximorphic depletions; about 5 percent pebbles; moderately acid; gradual smooth boundary.

2C2—57 to 80 inches; yellowish brown (10YR 5/4) loam; massive; firm; few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; many fine and medium distinct grayish brown (10YR 5/2) redoximorphic depletions; about 5 percent pebbles; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches

Depth to till: 20 to 40 inches

A or Ap horizon:

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—silt loam

Reaction—moderately acid to neutral

E horizon:

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—silt loam

Reaction—moderately acid to neutral

BE horizon (if it occurs):

Hue—10YR

Value—4

Chroma—3

Texture—silt loam or silty clay loam

Reaction—moderately acid to neutral

Bt horizon:

Hue—10YR

Value—4 or 5

Chroma—3 or 4

Texture—silty clay loam or silt loam

Reaction—strongly acid to slightly acid

Other features—a stone line or a thin lens of sandy material typically is at the lower boundary of this horizon at the contact with till

2Bt horizon:

Hue—7.5YR or 10YR

Value—5

Chroma—4 to 8

Texture—loam, clay loam, or sandy clay loam

Reaction—strongly acid to neutral

2BC and 2C horizons:

Hue—7.5YR or 10YR

Value—5

Chroma—4 to 8

Texture—loam, clay loam, or sandy clay loam

Reaction—strongly acid to neutral

Waukee Series

Typical Pedon

Waukee loam, 0 to 2 percent slopes, in a pasture; in Iowa County, Iowa; 2,000 feet south and 2,020 feet west of the northeast corner of sec. 5, T. 80 N., R. 9 W.; USGS Middle Amana topographic quadrangle; lat. 41 degrees 14 minutes 23.7 seconds N. and long. 91 degrees 38 minutes 41.1 seconds W., NAD 83:

- A1—0 to 7 inches; very dark grayish brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many fine roots throughout; few fine tubular pores; neutral; clear smooth boundary.
- A2—7 to 13 inches; very dark grayish brown (10YR 2/2) loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many very fine roots throughout; few fine tubular pores; neutral; clear smooth boundary.
- AB—13 to 17 inches; dark brown (10YR 3/3) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; many very fine roots throughout; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coats on faces of pedis; slightly acid; clear smooth boundary.
- Bw1—17 to 23 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; common very fine roots throughout; few fine tubular pores; common distinct dark brown (10YR 3/3) organic coats on all faces of pedis; moderately acid; clear smooth boundary.
- Bw2—23 to 31 inches; brown (10YR 4/3) loam; weak fine and medium subangular blocky structure; friable; common very fine roots throughout; few fine tubular pores; common distinct dark brown (10YR 3/3) organic coats on all faces of pedis; moderately acid; clear smooth boundary.
- 2BC—31 to 41 inches; brown (10YR 4/3) and dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure parting to single grain; very friable; few very fine roots throughout; moderately acid; gradual smooth boundary.
- 2C1—41 to 49 inches; dark yellowish brown (10YR 4/4) and light yellowish brown (10YR 6/4) loamy sand; single grain; loose; slightly acid; gradual smooth boundary.
- 2C2—49 to 80 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; about 5 percent subrounded gravel; slightly acid.

Range in Characteristics

Depth to sandy and gravelly material: 20 to 40 inches

Thickness of the mollic epipedon: 10 to 20 inches

Depth to carbonates: More than 72 inches

A or Ap horizon:

Hue—10YR

Value—2

Chroma—1 or 2

Texture—loam or silt loam that has a high content of sand

Reaction—strongly acid to neutral

Bw horizon:

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—loam or sandy clay loam

Reaction—strongly acid or moderately acid

2BC and 2C horizons:

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—loamy coarse sand, loamy sand, sand, or coarse sand or the gravelly analogs of these textures

Reaction—moderately acid or slightly acid

Wiota Series

Typical Pedon

Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field; in Iowa County, Iowa; 960 feet west and 1,400 feet north of the southeast corner of sec. 21, T. 81 N., R. 11 W.; USGS Ladora topographic quadrangle; lat. 41 degrees 48 minutes 29.2 seconds N. and long. 92 degrees 07 minutes 34.7 seconds W., NAD 83:

- Ap—0 to 8 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common fine and medium roots throughout; common very fine tubular pores; moderately acid; abrupt smooth boundary.
- A1—8 to 14 inches; very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; friable; common very fine roots throughout; common very fine tubular pores; slightly acid; clear smooth boundary.
- A2—14 to 19 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; moderately acid; clear smooth boundary.
- Bt1—19 to 31 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; gradual smooth boundary.
- Bt2—31 to 43 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine and medium subangular blocky structure; friable; few very fine roots throughout; common very fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; gradual smooth boundary.
- BC—43 to 53 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse subangular blocky structure; friable; common very fine tubular pores; slightly acid; clear smooth boundary.
- C1—53 to 65 inches; dark yellowish brown (10YR 4/4) silty clay loam; massive; friable; common very fine tubular pores; few fine distinct yellowish brown (7.5YR 5/6) redoximorphic concentrations; slightly acid; clear smooth boundary.
- C2—65 to 80 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; common very fine tubular pores; common fine and medium distinct yellowish brown (7.5YR 5/6) redoximorphic concentrations; common fine and medium distinct grayish brown (2.5Y 5/2) redoximorphic depletions; slightly acid.

Range in Characteristics

Depth to carbonates: More than 60 inches

Thickness of the mollic epipedon: 18 to 32 inches

Ap and A horizons:

Hue—10YR
 Value—2 or 3
 Chroma—1 or 2
 Texture—silty clay loam or silt loam
 Reaction—strongly acid to neutral

Bt horizon:

Hue—10YR
 Value—3 to 5
 Chroma—3 or 4
 Texture—silty clay loam
 Reaction—strongly acid to slightly acid

BC or C horizon:

Hue—10YR or 2.5Y
 Value—4 or 5
 Chroma—1 to 6
 Texture—silty clay loam or silt loam
 Reaction—slightly acid

Zook Series***Typical Pedon***

Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field; in Iowa County, Iowa; 1,800 feet south and 2,360 feet west of the northeast corner of sec. 31, T. 78 N., R. 9 W.; USGS Holbrook topographic quadrangle; lat. 41 degrees 31 minutes 14 seconds N. and long. 91 degrees 56 minutes 07 seconds W., NAD 83:

- Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine and medium subangular blocky structure parting to moderate fine granular; friable; common fine and medium roots; few very fine tubular pores; slightly acid; abrupt smooth boundary.
- A1—7 to 20 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine granular structure; friable; common fine roots; common very fine tubular pores; slightly acid; clear smooth boundary.
- A2—20 to 37 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; strong fine subangular blocky structure; firm; few very fine roots; common very fine tubular pores; moderately acid; clear smooth boundary.
- Bg1—37 to 48 inches; dark gray (2.5Y 4/1) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine tubular pores; slightly acid; gradual smooth boundary.
- Bg2—48 to 67 inches; gray (5Y 5/1) silty clay loam; weak medium subangular blocky structure; friable; common very fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid; gradual smooth boundary.
- Cg—67 to 80 inches; gray (5Y 5/1) silt loam; massive; very friable; common very fine tubular pores; common medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: More than 36 inches

Depth to carbonates: More than 60 inches

Ap and A horizons:

Hue—10YR or N; 10YR in overwash phase

Value—2 or 3; 2 or 3 in overwash phase

Chroma—0 or 1; 1 or 2 in overwash phase

Texture—silty clay loam or silty clay; silt loam in overwash phase

Reaction—moderately acid to slightly alkaline; moderately acid to slightly alkaline
in overwash phase

Bg horizon:

Hue—10YR to 5Y

Value—2 to 5

Chroma—1

Texture—silty clay loam or silty clay

Reaction—slightly acid or neutral

Cg horizon:

Hue—10YR to 5Y

Value—2 to 5

Chroma—1

Texture—silty clay loam, silt loam, or silty clay

Reaction—slightly acid or neutral

Formation of the Soils

In this section, the major factors of soil formation are described as they relate to the soils of Iowa County. The processes of horizon differentiation also are described.

Factors of Soil Formation

Soil forms through processes that act on deposited or accumulated geologic material. The characteristics of the soil at any given point are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and existed since accumulation; the living organisms on and in the soil; relief, topography, or lay of the land; and the length of time the forces of soil formation have acted on the soil material (Jenny, 1941).

Climate and plant and animal life are the active factors of soil formation. They act on the parent material and slowly change it into a natural body that has genetically related horizons, or layers. The effects of climate and plant and animal life are conditioned by relief. The parent material affects the kind of profile that forms and in extreme cases determines it almost entirely. Finally, time is needed for the transformation of the parent material into a soil. Some time is always needed for the development of soil horizons. A long period of time generally is needed for the development of distinct horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the others.

Parent Material

In Iowa County, parent material has affected the general character of the soil profile. Most of the soils in the county formed in glacial till, or ice-laid material; in loess, or windblown material; in alluvium, or water-deposited material; or in eolian, or windblown, sands.

Glacial till.—In Iowa County the major Pleistocene depositions of pre-Wisconsin age are Nebraskan and Kansan (pre-Illinoian) drift (Scholtes and others, 1951). The Kansan drift is identifiable throughout the county. On upland side slopes, it forms an extensive part of the landscape. The Nebraskan drift, however, is not readily identifiable on the surface in Iowa County.

In some deep road cuts and along some of the major stream valleys, the Aftonian paleosol is present below the Kansan glacial till (Kay, 1916; Kay and Apfel, 1929). This paleosol consists mainly of glacial till made up of coarse fragments in a clay loam matrix. The upper part of the till consists of yellowish brown material that is oxidized and leached. Below this zone is dark gray material that is calcareous, contains limestone and dolomite particles, and is neither oxidized nor leached.

Soils formed on the Kansan till plain during the Yarmouth and Sangamon interglacial periods before the loess was deposited. On nearly level interstream divides, the soils were strongly weathered and had a gray, plastic subsoil (called gumbotil) consisting of paleosol. The gumbotil that remains is several feet thick and is very slowly permeable.

Geologic erosion has cut below the Yarmouth-Sangamon paleosol and into the Kansan till and older deposits. Generally, a stone line or subjacent till that is overlain by pedisegment is at the depth to which this erosion has cut (Ruhe, 1956; Ruhe and Daniels, 1958). A paleosol has formed in the pedisegment stone line and in the subjacent till. Armstrong and Keswick soils formed in this material.

Geologic erosion removed the loess from many slopes and exposed strongly weathered paleosols. In some places, the paleosols have been beveled or truncated and only the lower part of the strongly weathered materials remains. In other places, erosion has removed all of the paleosols and has exposed till that is only slightly weathered. Erosion cut through to below the Yarmouth-Sangamon paleosol during the Late Sangamon (Ruhe, 1956; Ruhe, 1959). The material below the paleosols consists of loamy sediments over a stone line that, in turn, is above a highly weathered, clayey, reddish brown, acid till. Material that formed in the late Sangamon period is exposed on the narrow, slightly lowered interstream divides on some side slopes.

Loess.—Loess of Wisconsin age covers much of the uplands of Iowa County. This type of parent material is extensive in the county (Ruhe and others, 1957; Ruhe and Scholtes, 1955). It consists of accumulated particles of silt and clay that have been deposited by the wind. Variations in soils are related to the distance of the soils from the source of the loess. The source of the loess in Iowa County is probably the bottom land along the Missouri River in the western part of Iowa (Hutton, 1947).

On the stable upland divides, the loess is about 10 to 12 feet thick (Schafer, 1955). Otley, Mahaska, and Taintor soils are the dominant loess soils in Iowa County. Clinton, Fayette, Givin, Keomah, Ladoga, Seaton, and Sperry soils also formed in loess. Many of the high stream terraces along the major streams are covered with loess. The loess on these high stream terraces contains less clay and slightly more sand than the loess that covers the adjacent uplands. The soil material underlying the loess in these areas is stratified alluvium or valley fill. The alluvium generally has a high content of sand and gravel.

Alluvium.—Alluvium consists of sediments that have been deposited by water. As these sediments move, they are sorted to some extent, but they are as well sorted as loess in only a few places. Also, alluvium does not have the wide range of particle sizes that occurs in glacial drift. The alluvium in Iowa County is derived from loess and glacial drift, so it is mainly a mixture of silt and clay, of silt and sand, or of sand and gravel. The coarse sand and gravel generally are only in the pre-Sangamon alluvial sediments on the stream benches. Sediments that accumulated at the foot of the slope on which they originated are called colluvium or local alluvium.

The soils on flood plains, on bottom land, and along drainageways formed in alluvium. As a river overflows its channel and the water spreads over the flood plain, coarse textured material, such as sand and coarse silt, is deposited first. As the floodwater spreads, it moves more slowly and finer textured sediments are deposited. As the floodwater recedes, the clay particles, which are the finest in texture, settle from the water that is left standing on the lowest part of the flood plain.

Quiver, Nodaway, and Klum soils commonly are closest to the stream channel and are coarser textured than the other soils on bottom land. Chequest, Tuskeego, and Zook soils are along the Iowa and English Rivers and their tributaries, commonly away from the meanders of the stream. Zook and Wabash soils typically are on the lower part of the bottom land and are the finest textured soils derived from alluvium in the county. Colo and Ackmore soils are along the smaller streams. These soils are widely distributed throughout the county. In places they formed in local alluvium at the base of upland slopes. Ely and Judson soils are the dominant soils that formed in local alluvium in the county. Typically, they are on footslopes or alluvial fans and are in lower positions on the landscape than those of the surrounding soils derived from loess and glacial materials.

Eolian material.—Eolian material consists of sediments that have been deposited by the wind. In some areas the wind has carried fine sand from the stream channels and the flood plains to higher elevations (Prior, 1976). This dune sand has been deposited on low stream terraces, high stream terraces, and uplands fringing the leeward side of valleys. Chelsea and Sparta soils formed in eolian sand that is more than 5 feet thick (fig. 16).

Climate

The soils in Iowa County have been forming under a midcontinental, subhumid climate for the past 5,000 years (Ruhe, 1956; Ruhe and others, 1957). The morphology and properties of the majority of the soils in Iowa County indicate that this climate was similar to the present climate. From 6,500 to 16,000 years ago, however, the climate probably was cool and moist. This type of climate was conducive primarily to a growth of forest vegetation (Ruhe, 1956; Ruhe and others, 1957). A study indicates that the climate during the Sangamon period of the Pleistocene Epoch was cool and moist and conducive mainly to the growth of conifers (Lane, 1941).

The influence of the general climate in a region is modified by local conditions in or near the developing soils. For example, soils on south-facing slopes formed under a micro-climate that was warmer and drier than the average climate of nearby areas. The low-lying, poorly drained soils on bottom land formed under a wetter and colder climate than that in most of the surrounding upland areas. These local differences influence the characteristics of the soils and account for some of the differences among soils in the same general climatic region.



Figure 16.—An area of Chelsea fine sand, 9 to 18 percent slopes, above an alluvial terrace of Nevin and Bremer soils. The Chelsea soils formed in eolian sand blown from nearby stream valleys.

Living Organisms

Many changes in climate and vegetation took place in Iowa during the post-glacial period (Lane, 1941; Ruhe, 1956). Spruce grew on the soils from 12,000 to 8,000 years ago. This type of vegetation was followed by a coniferous-deciduous forest, which lasted until about 6,500 years ago. At that time, grass became the dominant vegetation in the area.

For the past 5,000 years, the soils of the survey area have been influenced by prairie grasses and some trees. Big bluestem and little bluestem were the main prairie grasses. The dominant trees were deciduous—mainly oak, hickory, ash, elm, and maple.

The effects of vegetation on soils similar to those in Iowa County have been studied recently. Evidence shows that the vegetation changed while soils formed in areas bordering trees and grasses. The morphology of Armstrong, Atterberry, Bassett, Downs, Ella, Gara, Givin, Hayfield, Koszta, Ladoga, Tuskeego, Watkins, and Waubeek soils reflects the influence of both trees and grasses. Trees influenced the formation of Chelsea, Clinton, Fayette, Keomah, Keswick, Lindley, Seaton, Stronghurst, and Tell soils (Prill and Riecken, 1958). Grasses influenced the formation of Bremer, Chequest, Colo, Dickinson, Dinsdale, Ely, Judson, Kenyon, Mahaska, Nevin, Otley, Pillot, Shelby, Sparta, Sperry, Taintor, Tama, Vesser, Wiota, and Zook soils.

Important changes take place when the soil is cultivated. Some of these changes have little effect on productivity, while others have a drastic effect. The changes caused by water erosion generally are the most significant. On many of the cultivated soils in the county, particularly the gently rolling to hilly soils, part or all of the original surface layer has been lost through sheet erosion. In places, shallow to deep gullies have formed.

In many fields that are cultivated year after year, the granular structure that was apparent when the prairies were undisturbed has broken down. In these fields the soil surface tends to crust and harden when it dries. Fine textured soils that have been plowed when too wet are less permeable than similar soils in undisturbed areas.

Humans have increased the productivity of some soils. Large areas of bottom-land soils, such as Colo and Zook soils, have been made suitable for cultivation because drainage ditches have been dug and diversions have been constructed at the foot of upland slopes. The cropland in areas of Taintor and Mahaska soils on broad upland flats has been greatly improved because a drainage system, such as subsurface tile, has been installed.

Deficiencies in plant nutrients have been counteracted in some areas. Some soils are more productive than they were in their natural state because of applications of commercial fertilizer.

Relief

Relief is an important cause of differences among soils. It indirectly influences soil formation through its effect on drainage. In Iowa County, the soils range from level to very steep. In many areas on bottom land, the nearly level soils are occasionally flooded and have a permanently or periodically high water table. In depressions, water soaks into the nearly level soils that are subject to flooding. Conversely, much of the rainfall runs off the steep soils on uplands.

Level soils are on the broad upland flats and on the stream bottoms. The steepest soils in the county are generally on the southern and western sides of major streams and their tributaries. The intricate pattern of upland drainageways indicates that the landscape in nearly the entire county has been modified by geologic processes.

Bremer, Sperry, Taintor, Walford, and similar soils, which formed in areas where the water table is high, have a dominantly grayish subsoil. Ely, Givin, Ladoga, Mahaska,

Nevin, and similar soils formed in areas where the water table fluctuated and was periodically high. Gara, Lindley, Shelby, and other soils that formed in areas where the water table was deeper in the soil profile have a yellowish brown or strong brown subsoil. Bremer, Taintor, and other soils formed under prairie grasses and have a high water table. They contain more organic matter in the surface layer than well drained soils that also formed under prairie grasses. Clay accumulates in the subsoil of Sperry and other soils that are in slight depressions or in nearly level areas. A large amount of water carries the clay particles downward. Sperry soils are locally known as “claypan” soils because they have a slowly permeable subsoil, in which the greatest amount of downward-moving clay has accumulated.

Gara, Lindley, Shelby, and similar soils, which formed in glacial till, have a wide range in slope and are on many kinds of slopes. In these soils, the depth to carbonates is shallowest where the slopes are steepest, are convex, or are most unstable.

Time

The length of time required for a soil to form ultimately affects the kind of soil that is formed. An older or more strongly developed soil has well defined genetic horizons. A less well defined soil does not exhibit genetic horizons or has only weakly defined ones. Most soils on bottom land that are subject to frequent flooding are weakly developed because they have not been in place long enough for distinct horizons to develop.

On the steeper soils, material is generally removed before a thick profile with strongly developed horizons has had time to develop. Even though the material has been in place for a long time, the soil may be immature because much of the water runs off the slopes rather than through the soil profile. Shelby, Gara, and Lindley soils formed on recently dissected slopes of late Wisconsin age (Ruhe, 1956; Ruhe, 1959). These soils are no older than 11,000 to 14,000 years and are probably much younger.

Adair, Armstrong, and Keswick soils are among the oldest soils in the county (Ruhe, 1956; Ruhe and Scholtes, 1955). They formed in material that is much older than the loess-derived parent material of such soils as Clinton, Downs, Fayette, Ladoga, Mahaska, Otley, Seaton, Sperry, Tama, and Taintor soils. Soils derived from loess are no older than 14,000 to 16,000 years and may be considered younger.

Radiocarbon studies of wood fragments and organic matter in loess and glacial till have made it possible to determine the approximate ages of soils that formed in loess and glacial deposits in Iowa. In Iowa County, the loess is thickest in areas of the nearly level soils on stable upland divides. It is underlain by a Yarmouth-Sangamon paleosol that is on the pre-Illinoian (Kansan) till surface. In many places below the stable uplands, an organic layer is at the base of the loess. Organic matter below the solum of loess soils in Wayne County, Iowa, had radiocarbon ages of 19,000 to 20,000 years.

Processes of Horizon Differentiation

Horizons are differentiated from each other when four basic kinds of changes take place. These changes are additions, removals, transfers, and transformations (Simonson, 1959). Each of these kinds of change affects many substances in the soils, such as organic matter, soluble salts, carbonates, sesquioxides, and silicate clay materials. Most of these processes tend to promote horizon differentiation, but some tend to offset or retard it. The processes and the resulting changes occur simultaneously in soils. The ultimate nature of the profile is governed by the balance of these changes within the soil.

An accumulation of organic matter generally is an early phase of horizon differentiation. It has been an important process in the differentiation of horizons in the

soils of Iowa County. The amount of organic matter that has accumulated in the surface layer of the soils ranges from high to low. In some soils, as a result of erosion, the content of organic matter is now lower than it was in the past.

The removal of substances from parts of the soil profile is important in the differentiation of horizons. The downward movement of calcium carbonates and bases is an example. The upper part of the soils in Iowa County has been leached of calcium carbonate. Many soils have been leached to the extent that they are strongly acid or very strongly acid, even in the subsoil.

Phosphorus is removed from the subsoil by plant roots and transferred to the parts of the plant growing above ground. It is then returned to the surface layer in the plant residue. This process affects the form and distribution of phosphorus in the soil profile.

The translocation of silicate clay minerals is another important process. The clay minerals in the surface layer are carried downward in suspension by percolating water. They accumulate in the subsoil as fillings in pores and root channels and as clay films on the faces of the soil structure. This process has affected many of the soils in the county. In other soils, however, the clay content of the surface layer is not markedly different from that of the underlying layer and other evidence of clay movement is minimal.

Another kind of transfer occurs when cracks form as a result of shrinking and swelling. Because of the cracks, some of the material from the surface layer is transferred to the lower parts of the profile. This transfer is minimal in most soils. It is most common in very clayey soils. It can occur in such soils as Keswick and Zook soils.

Transformations are physical and chemical. The weathering of soil particles to smaller sizes is an example of a transformation. The reduction of iron is another example. This process is called gleying. It occurs when the soil is saturated for long periods. The soil contains enough organic matter for biological activity to take place during periods of saturation. Gleying is evidenced by ferrous iron and gray colors in the soil. It is characteristic of poorly drained soils, such as Taintor soils. The content of reductive extractable iron, or free iron, generally is lower in somewhat poorly drained soils, such as Mahaska soils. Another kind of transformation is the weathering of the primary apatite minerals in the parent material to secondary phosphorus compounds.

References

- Highland, J.D., and R.I. Dideriksen. 1967. Soil survey of Iowa County, Iowa. U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the Iowa Agricultural Experiment Station.
- Hutton, Curtis E. 1947. Studies of loess-derived soils in southwestern Iowa. *Soil Science Society of America Proceedings* 12: 424-431.
- Jenny, Hans. 1941. Factors of soil formation.
- Kay, George F. 1916. Gumbotil, a new term in Pleistocene geology. *Science* 44: 637-638.
- Kay, George F., and Earl T. Apfel. 1929. The pre-Illinoian Pleistocene geology of Iowa. *Iowa Geological Survey Annual Report* 34.
- Lane, G.H. 1941. Pollen analysis of interglacial peats of Iowa. *Iowa Geological Survey Annual Report* 37: 237-260.
- Prill, R.C., and F.F. Riecken. 1958. Variations in forest-derived soils formed in Kansan till in southern and southeastern Iowa. *Soil Science Society of America Proceedings* 22: 70-75.
- Prior, J.C. 1976. A regional guide to Iowa landforms. *Iowa Geological Survey Educational Bulletin* 3.
- Ruhe, Robert V. 1956. Geomorphic surfaces and the nature of soils. *Soil Science* 82: 441-445.
- Ruhe, Robert V. 1959. Stone lines in soils. *Soil Science* 87: 223-231.
- Ruhe, Robert V., and R.B. Daniels. 1958. Soils, paleosols, and soil horizon nomenclature. *Soil Science Society of America Proceedings* 22: 66-69.
- Ruhe, Robert V., Meyer Rubin, and W.H. Scholtes. 1957. Late Pleistocene radiocarbon chronology in Iowa. *American Journal of Science* 255: 671-689.
- Ruhe, Robert V., and W.H. Scholtes. 1955. Radiocarbon dates in central Iowa. *Journal of Geology* 63: 82-92.
- Ruhe, Robert V., and P.H. Walker. 1968. Hillslope models and soil formation: I, Open systems. *Transactions of the 9th International Congress of Soil Science, Adelaide, Australia, volume 4*, pp. 551-560.

Schafer, George M. 1955. Relations of Taintor and Haig soil series to micro relief of the buried Kansan till surface in Jefferson County, Iowa. Iowa Academy of Science Proceedings 62: 318-328.

Scholtes, W.H., R.V. Ruhe, and F.F. Riecken. 1951. Use of morphology of buried soil profiles in the Pleistocene of Iowa. Iowa Academy of Science Proceedings 58: 295-306.

Simonson, Roy W. 1959. Outline of a generalized theory of soil genesis. Soil Science Society of America Proceedings 23: 152-156.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the “National Soil Survey Handbook” (available in local offices of the Natural Resources Conservation Service or on the Internet).

Ablation till. Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope (fig. 17). In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal till. Compact till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

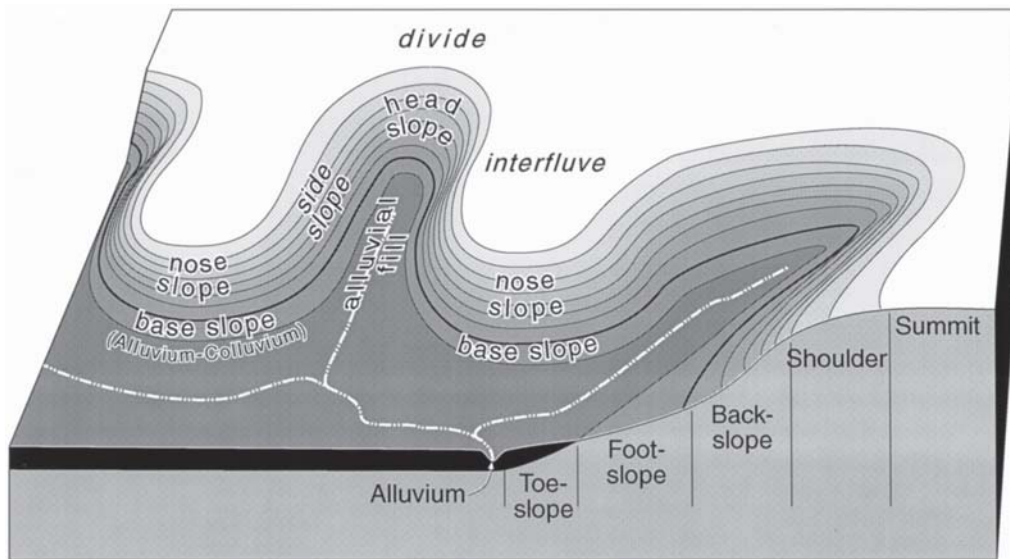


Figure 17.—Landscape relationship of geomorphic components and hillslope positions (modified after Ruhe and Walker, 1968).

Base slope (geomorphology). A geomorphic component of hills (fig. 17) consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Beach deposits. Material, such as sand and gravel, that is generally laid down parallel to an active or relict shoreline of a post-glacial or glacial lake.

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush

management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. See Terracettes.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divide. (a) The line of separation, or (b) the summit area, or narrow tract of higher ground that constitutes the watershed boundary between two adjacent drainage basins (fig. 17); it divides the surface waters that flow naturally in one direction from those that flow in the opposite direction.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained*, *somewhat excessively drained*, *well drained*, *moderately well drained*, *somewhat poorly drained*, *poorly drained*, and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Earthy fill. See Mine spoil.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building

up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Esker. A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hillslope (fig. 17). A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway (fig. 17). The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next

crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill (fig. 17).

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential.

The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Ice-walled lake plain. A relict surface marking the floor of an extinct lake basin that was formed on solid ground and surrounded by stagnant ice in a stable or unstable superglacial environment on stagnation moraines. As the ice melted, the lake plain became perched above the adjacent landscape. The lake plain is well sorted, generally fine textured, stratified deposits.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill (fig. 17); shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements.

Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Kame moraine. An end moraine that contains numerous kames. A group of kames along the front of a stagnant glacier, commonly comprising the slumped remnants of a formerly continuous outwash plain built up over the foot of rapidly wasting or stagnant ice.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake bed. The bottom of a lake; a lake basin.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

- Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.
- Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.
- Masses.** See Redoximorphic features.
- Meander belt.** The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.
- Meander scar.** A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.
- Meander scroll.** One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.
- Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.
- Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.
- Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.
- Mine spoil.** An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.
- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.
- Miscellaneous area.** A kind of map unit that has little or no natural soil and supports little or no vegetation.
- MLRA (major land resource area).** A geographic area characterized by a particular pattern of land uses, elevation and topography, soils, climate, water resources, and potential natural vegetation.
- Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
- Moraine.** In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates

less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside (fig. 17). The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Parts per million (ppm). The concentration of a substance in the soil, such as phosphorus or potassium, in one million parts of air-dried soil on a weight per weight basis.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Phosphorus. The amount of phosphorus available to plants at a depth of 30 to 42 inches is expressed in parts per million and based on the weighted average of air-dried soil samples. Terms describing the amount of available phosphorus are:

Very low	less than 7.5 ppm
Low	7.5 to 13.0 ppm
Medium	13.0 to 22.5 ppm
High	more than 22.5 ppm

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitted outwash plain. An outwash plain marked by many irregular depressions, such as kettles, shallow pits, and potholes, which formed by melting of incorporated ice masses.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potassium. The amount of potassium available to plants at a depth of 12 to 24 inches is expressed in parts per million and based on the weighted average of air-dried soil samples. Terms describing the amount of available potassium are:

Very low	less than 50 ppm
Low	50 to 79 ppm
Medium	79 to 125 ppm
High	more than 125 ppm

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
 - B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
 - C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
 - B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope (fig. 17). A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside (fig. 17). The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stagnation moraine. A body of drift released by the melting of a glacier that ceased flowing. Commonly but not always occurs near ice margins; composed of till, ice-contact stratified drift, and small areas of glacial lake sediment. Typical landforms are knob-and-kettle topography, locally including ice-walled lake plains.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial.

Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subglacial. Formed or accumulated in or by the bottom parts of a glacier or ice sheet.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope (fig. 17). It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Swale. A slight depression in the midst of generally level land. A shallow depression in an undulating ground moraine caused by uneven glacial deposition.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Till. Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain. An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope (fig. 17). Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by

atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at <http://offices.sc.egov.usda.gov/locator/app>.



United States
Department of
Agriculture



NRCS

Natural
Resources
Conservation
Service

In cooperation with Iowa
Agriculture and Home
Economics Experiment
Station and Cooperative
Extension Service, Iowa
State University; and
Division of Soil
Conservation, Iowa
Department of Agriculture
and Land Stewardship

Soil Survey of Iowa County, Iowa

Part II



Iowa Department of
Agriculture and
Land Stewardship

IOWA STATE UNIVERSITY

Iowa Agriculture and Home Economics
Experiment Station

IOWA STATE UNIVERSITY

University Extension



How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

On the **general soil map**, the survey area is divided into groups of soils called associations. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the soil associations on the color-coded map legend, and then refer to the section **General Soil Map Units** in Part I for a general description of the soils in your area.

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets** in Part III. Note the number of the map sheet, and turn to that sheet. Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. The **Contents** in Part I lists the map units and shows the page where each map unit is described.

The **Contents** in Part II shows which table has information on a specific land use or soil property for each detailed soil map unit. Also, see the **Contents** in Part I and Part II for other sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2004. Soil names and descriptions were approved in 2005. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. The most current official data are available through the NRCS Web Soil Survey (<http://soils.usda.gov>).

This survey was made cooperatively by the Natural Resources Conservation Service; the Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University; and the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship. The survey is part of the technical assistance furnished to the Iowa County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Cover: A typical rural landscape in Iowa County.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at <http://www.nrcs.usda.gov>.

Contents

How To Use This Soil Survey	i
Introduction to Part II	1
Interpretive Ratings	1
Rating Class Terms	2
Numerical Ratings	2
Table: Classification of the Soils	2
Table: Acreage and Proportionate Extent of the Soils	4
Agronomy	9
Cropland Management Considerations	10
Table: Cropland Management Considerations	12
Crop Yield Estimates	37
Land Capability Classification	37
Corn Suitability Rating	38
Crop Yields	38
Pasture Yields	38
Table: Land Capability, Corn Suitability Rating, and Yields per Acre of Crops ...	39
Table: Land Capability and Yields per Acre of Pasture	51
Prime Farmland	64
Table: Prime Farmland	65
Agricultural Waste Management	67
Table: Agricultural Waste Management	69
Recreational Development	111
Table: Camp Areas, Picnic Areas, and Playgrounds	113
Table: Paths, Trails, and Golf Fairways	137
Engineering	157
Building Site Development	158
Table: Dwellings and Small Commercial Buildings	160
Table: Roads and Streets, Shallow Excavations, and Lawns and Landscaping	184
Sanitary Facilities	212
Table: Sewage Disposal	215
Table: Landfills	245
Construction Materials	271
Table: Source of Sand and Gravel	273
Table: Source of Reclamation Material, Roadfill, and Topsoil	295
Water Management	325
Table: Ponds and Embankments	326
Soil Properties	351
Engineering Properties	352
Table: Engineering Properties	353
Physical Properties	398
Table: Physical Properties of the Soils	400
Chemical Properties	434
Table: Chemical Properties of the Soils	435

Water Features	460
Table: Water Features	462
Soil Features	541
Table: Soil Features	542

Issued 2007

Soil Survey of Iowa County, Iowa

Introduction to Part II

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

This part of the soil survey includes interpretations for various uses of the soils and data on soil properties. This information can be used to plan the use and management of soils for crops and pasture or as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The table "Classification of the Soils" is at the end of this section. Information about the system of soil taxonomy used by the Natural Resources Conservation Service is available in Part I of this publication. The extent of the map units in this survey area is shown in the table "Acreage and Proportionate Extent of the Soils."

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited*, *somewhat limited*, and *very limited*. The suitability ratings are expressed as *well suited*, *moderately suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text in Part I for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Ackmore-----	Fine-silty, mixed, superactive, nonacid, mesic Mollic Fluvaquents
*Adair-----	Fine, smectitic, mesic Aquertic HapludalFs
Amana-----	Fine-silty, mixed, superactive, mesic Aquic Hapludolls
Aquents-----	Mesic Aquents
Armstrong-----	Fine, smectitic, mesic Aquertic HapludalFs
Atterberry-----	Fine-silty, mixed, superactive, mesic Udollic EndoaqualFs
Bassett-----	Fine-loamy, mixed, superactive, mesic Mollic HapludalFs
*Bassett-----	Fine-loamy, mixed, superactive, mesic Typic HapludalFs
Bremer-----	Fine, smectitic, mesic Typic Argiaquolls
Chelsea-----	Mixed, mesic Lamellic Udipsamments
Chequest-----	Fine, smectitic, mesic Vertic Endoaquolls
Clinton-----	Fine, smectitic, mesic Chromic Vertic HapludalFs
Colo-----	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Dickinson-----	Coarse-loamy, mixed, superactive, mesic Typic Hapludolls
Dinsdale-----	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Downs-----	Fine-silty, mixed, superactive, mesic Mollic HapludalFs
*Downs-----	Fine-silty, mixed, superactive, mesic Typic HapludalFs
Ella-----	Fine-silty, mixed, superactive, mesic Mollic HapludalFs
Ely-----	Fine-silty, mixed, superactive, mesic Aquic Cumulic Hapludolls
Fayette-----	Fine-silty, mixed, superactive, mesic Typic HapludalFs
Gara-----	Fine-loamy, mixed, superactive, mesic Mollic HapludalFs
*Gara-----	Fine-loamy, mixed, superactive, mesic Typic HapludalFs
Givin-----	Fine, smectitic, mesic Udollic EndoaqualFs
Hayfield-----	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Aquollic HapludalFs
Judson-----	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Kenyon-----	Fine-loamy, mixed, superactive, mesic Typic Hapludolls
*Kenyon-----	Fine-loamy, mixed, superactive, mesic Dystric Eutrudepts
Keomah-----	Fine, smectitic, mesic Aeric EndoaqualFs
Keswick-----	Fine, smectitic, mesic Aquertic Chromic HapludalFs
Klum-----	Coarse-loamy, mixed, superactive, nonacid, mesic Mollic Udifluvents
Kosztka-----	Fine-silty, mixed, superactive, mesic Udollic EndoaqualFs

Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Ladoga-----	Fine, smectitic, mesic Mollic HapludalFs
*Ladoga-----	Fine, smectitic, mesic Typic HapludalFs
Lawson-----	Fine-silty, mixed, superactive, mesic Aquic Cumulic Hapludolls
Lindley-----	Fine-loamy, mixed, superactive, mesic Typic HapludalFs
Mahaska-----	Fine, smectitic, mesic Aquertic Argiudolls
Muscatine-----	Fine-silty, mixed, superactive, mesic Aquic Hapludolls
Nevin-----	Fine-silty, mixed, superactive, mesic Aquic Argiudolls
Nodaway-----	Fine-silty, mixed, superactive, nonacid, mesic Mollic Udifluvents
Otley-----	Fine, smectitic, mesic Oxyaquic Argiudolls
*Otley-----	Fine, smectitic, mesic Mollic Oxyaquic HapludalFs
*Otley-----	Fine, smectitic, mesic Oxyaquic HapludalFs
Pillot-----	Fine-silty over sandy or sandy-skeletal, mixed, superactive, mesic Typic Argiudolls
*Pillot-----	Fine-silty over sandy or sandy-skeletal, mixed, superactive, mesic Mollic HapludalFs
Quiver-----	Fine-silty, mixed, superactive, nonacid, mesic Mollic Fluvaquents
Seaton-----	Fine-silty, mixed, superactive, mesic Typic HapludalFs
Shelby-----	Fine-loamy, mixed, superactive, mesic Typic Argiudolls
*Shelby-----	Fine-loamy, mixed, superactive, mesic Mollic HapludalFs
Sparta-----	Sandy, mixed, mesic Entic Hapludolls
Sperry-----	Fine, smectitic, mesic Typic Argialbolls
Stronghurst-----	Fine-silty, mixed, superactive, mesic Aeric EndoaqualFs
Taintor-----	Fine, smectitic, mesic Vertic Argiaquolls
Tama-----	Fine-silty, mixed, superactive, mesic Typic Argiudolls
*Tama-----	Fine-silty, mixed, superactive, mesic Mollic HapludalFs
Tell-----	Fine-silty over sandy or sandy-skeletal, mixed, superactive, mesic Typic HapludalFs
Tuskeego-----	Fine, smectitic, mesic Mollic EndoaqualFs
Udorthents-----	Loamy Udorthents
Vesser-----	Fine-silty, mixed, superactive, mesic Argiaquic Argialbolls
Wabash-----	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Walford-----	Fine-silty, mixed, superactive, mesic Mollic EndoaqualFs
Watkins-----	Fine-silty, mixed, superactive, mesic Mollic HapludalFs
Waubee-----	Fine-silty, mixed, superactive, mesic Mollic HapludalFs
Waukee-----	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Typic Hapludolls
Wiota-----	Fine-silty, mixed, superactive, mesic Typic Argiudolls
Zook-----	Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
5B	Ackmore-Colo complex, 2 to 5 percent slopes-----	12,371	3.3
7	Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded-----	2,293	0.6
7B	Wiota silty clay loam, 2 to 5 percent slopes, rarely flooded-----	815	0.2
8B	Judson silty clay loam, 2 to 5 percent slopes-----	3,130	0.8
24C2	Shelby loam, 5 to 9 percent slopes, moderately eroded-----	321	*
24D2	Shelby loam, 9 to 14 percent slopes, moderately eroded-----	1,489	0.4
24D3	Shelby clay loam, 9 to 14 percent slopes, severely eroded-----	278	*
24E2	Shelby loam, 14 to 18 percent slopes, moderately eroded-----	826	0.2
24E3	Shelby clay loam, 14 to 18 percent slopes, severely eroded-----	597	0.2
41	Sparta loamy fine sand, 0 to 2 percent slopes-----	243	*
41B	Sparta loamy fine sand, 2 to 5 percent slopes-----	387	0.1
41C	Sparta loamy fine sand, 5 to 9 percent slopes-----	692	0.2
41D	Sparta loamy fine sand, 9 to 14 percent slopes-----	617	0.2
43	Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded-----	4,386	1.2
51	Vesser silt loam, 0 to 2 percent slopes, occasionally flooded-----	145	*
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	2,938	0.8
54+	Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash----	229	*
63C	Chelsea loamy fine sand, 2 to 9 percent slopes-----	379	0.1
63E	Chelsea loamy fine sand, 9 to 18 percent slopes-----	105	*
63G	Chelsea loamy fine sand, 18 to 40 percent slopes-----	137	*
65D2	Lindley loam, 9 to 14 percent slopes, moderately eroded-----	385	0.1
65D3	Lindley clay loam, 9 to 14 percent slopes, severely eroded-----	81	*
65E2	Lindley loam, 14 to 18 percent slopes, moderately eroded-----	1,878	0.5
65E3	Lindley clay loam, 14 to 18 percent slopes, severely eroded-----	1,137	0.3
65F	Lindley loam, 18 to 25 percent slopes-----	732	0.2
65F2	Lindley loam, 18 to 25 percent slopes, moderately eroded-----	3,481	0.9
65F3	Lindley clay loam, 18 to 25 percent slopes, severely eroded-----	2,401	0.6
65G	Lindley loam, 25 to 40 percent slopes-----	1,894	0.5
75	Givin silt loam, 0 to 2 percent slopes-----	966	0.3
76B	Ladoga silt loam, 2 to 5 percent slopes-----	5,534	1.5
76C	Ladoga silt loam, 5 to 9 percent slopes-----	727	0.2
76C2	Ladoga silt loam, 5 to 9 percent slopes, moderately eroded-----	12,216	3.2
76D	Ladoga silt loam, 9 to 14 percent slopes-----	114	*
76D2	Ladoga silt loam, 9 to 14 percent slopes, moderately eroded-----	12,692	3.4
76D3	Ladoga silty clay loam, 9 to 14 percent slopes, severely eroded-----	1,168	0.3
76E2	Ladoga silt loam, 14 to 18 percent slopes, moderately eroded-----	825	0.2
76E3	Ladoga silty clay loam, 14 to 18 percent slopes, severely eroded-----	367	*
80B	Clinton silt loam, 2 to 5 percent slopes-----	1,800	0.5
80C	Clinton silt loam, 5 to 9 percent slopes-----	308	*
80C2	Clinton silty clay loam, 5 to 9 percent slopes, moderately eroded-----	8,525	2.3
80D	Clinton silt loam, 9 to 14 percent slopes-----	424	0.1
80D2	Clinton silty clay loam, 9 to 14 percent slopes, moderately eroded-----	11,514	3.1
80D3	Clinton silty clay loam, 9 to 14 percent slopes, severely eroded-----	2,747	0.7
80E2	Clinton silty clay loam, 14 to 18 percent slopes, moderately eroded-----	3,301	0.9
80E3	Clinton silty clay loam, 14 to 18 percent slopes, severely eroded-----	1,516	0.4
80F2	Clinton silty clay loam, 18 to 25 percent slopes, moderately eroded-----	511	0.1
83B	Kenyon loam, 2 to 5 percent slopes-----	288	*
83C	Kenyon loam, 5 to 9 percent slopes-----	621	0.2
83C2	Kenyon loam, 5 to 9 percent slopes, moderately eroded-----	629	0.2
83D2	Kenyon loam, 9 to 14 percent slopes, moderately eroded-----	51	*
88	Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded-----	4,983	1.3
93D2	Shelby-Adair complex, 9 to 14 percent slopes, moderately eroded-----	1,560	0.4
93D3	Shelby-Adair complex, 9 to 14 percent slopes, severely eroded-----	328	*
93E2	Shelby-Adair complex, 14 to 18 percent slopes, moderately eroded-----	944	0.3
119	Muscataine silty clay loam, 0 to 2 percent slopes-----	999	0.3
120B	Tama silty clay loam, 2 to 5 percent slopes-----	3,305	0.9
120C	Tama silty clay loam, 5 to 9 percent slopes-----	1,321	0.4
120C2	Tama silty clay loam, 5 to 9 percent slopes, moderately eroded-----	4,194	1.1
120D2	Tama silty clay loam, 9 to 14 percent slopes, moderately eroded-----	4,413	1.2
120D3	Tama silty clay loam, 9 to 14 percent slopes, severely eroded-----	217	*
120E2	Tama silty clay loam, 14 to 18 percent slopes, moderately eroded-----	251	*
122	Sperry silt loam, 0 to 1 percent slopes, depressional-----	138	*

See footnote at end of table.

Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded-----	4,444	1.2
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash----	9,219	2.5
162B	Downs silt loam, 2 to 5 percent slopes-----	1,872	0.5
162C	Downs silt loam, 5 to 9 percent slopes-----	804	0.2
162C2	Downs silt loam, 5 to 9 percent slopes, moderately eroded-----	5,094	1.4
162D2	Downs silt loam, 9 to 14 percent slopes, moderately eroded-----	5,911	1.6
162D3	Downs silty clay loam, 9 to 14 percent slopes, severely eroded-----	501	0.1
162E2	Downs silt loam, 14 to 18 percent slopes, moderately eroded-----	1,220	0.3
162E3	Downs silty clay loam, 14 to 18 percent slopes, severely eroded-----	513	0.1
163B	Fayette silt loam, 2 to 5 percent slopes-----	1,122	0.3
163C	Fayette silt loam, 5 to 9 percent slopes-----	1,088	0.3
163C2	Fayette silt loam, 5 to 9 percent slopes, moderately eroded-----	4,703	1.3
163D	Fayette silt loam, 9 to 14 percent slopes-----	1,094	0.3
163D2	Fayette silt loam, 9 to 14 percent slopes, moderately eroded-----	4,448	1.2
163D3	Fayette silty clay loam, 9 to 14 percent slopes, severely eroded-----	1,415	0.4
163E	Fayette silt loam, 14 to 18 percent slopes-----	592	0.2
163E2	Fayette silt loam, 14 to 18 percent slopes, moderately eroded-----	2,603	0.7
163E3	Fayette silty clay loam, 14 to 18 percent slopes, severely eroded-----	2,092	0.6
163F	Fayette silt loam, 18 to 25 percent slopes-----	1,469	0.4
163F2	Fayette silt loam, 18 to 25 percent slopes, moderately eroded-----	2,559	0.7
163F3	Fayette silty clay loam, 18 to 25 percent slopes, severely eroded-----	1,172	0.3
163G	Fayette silt loam, 25 to 40 percent slopes-----	5,249	1.4
165	Stronghurst silt loam, 0 to 2 percent slopes-----	99	*
171C2	Bassett loam, 5 to 9 percent slopes, moderately eroded-----	918	0.2
171D2	Bassett loam, 9 to 14 percent slopes, moderately eroded-----	376	*
171D3	Bassett loam, 9 to 14 percent slopes, severely eroded-----	240	*
171E2	Bassett loam, 14 to 18 percent slopes, moderately eroded-----	111	*
171E3	Bassett loam, 14 to 18 percent slopes, severely eroded-----	117	*
172	Wabash silty clay, 0 to 2 percent slopes, occasionally flooded-----	158	*
175	Dickinson fine sandy loam, 0 to 2 percent slopes-----	263	*
175B	Dickinson fine sandy loam, 2 to 5 percent slopes-----	352	*
175C	Dickinson fine sandy loam, 5 to 9 percent slopes-----	116	*
178	Waukee loam, 0 to 2 percent slopes-----	358	*
178B	Waukee loam, 2 to 5 percent slopes-----	572	0.2
178C	Waukee loam, 5 to 9 percent slopes-----	197	*
179D2	Gara loam, 9 to 14 percent slopes, moderately eroded-----	1,141	0.3
179D3	Gara clay loam, 9 to 14 percent slopes, severely eroded-----	194	*
179E2	Gara loam, 14 to 18 percent slopes, moderately eroded-----	1,769	0.5
179E3	Gara clay loam, 14 to 18 percent slopes, severely eroded-----	1,407	0.4
179F2	Gara loam, 18 to 25 percent slopes, moderately eroded-----	563	0.1
179F3	Gara clay loam, 18 to 25 percent slopes, severely eroded-----	717	0.2
180	Keomah silt loam, 0 to 2 percent slopes-----	102	*
192D2	Adair silty clay loam, 9 to 14 percent slopes, moderately eroded-----	1,332	0.4
192D3	Adair clay loam, 9 to 14 percent slopes, severely eroded-----	400	0.1
220	Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded-----	5,179	1.4
279	Taintor silty clay loam, 0 to 2 percent slopes-----	885	0.2
280	Mahaska silty clay loam, 0 to 2 percent slopes-----	6,555	1.7
281B	Otley silty clay loam, 2 to 5 percent slopes-----	14,619	3.9
281C	Otley silty clay loam, 5 to 9 percent slopes-----	1,749	0.5
281C2	Otley silty clay loam, 5 to 9 percent slopes, moderately eroded-----	17,908	4.8
281D2	Otley silty clay loam, 9 to 14 percent slopes, moderately eroded-----	12,032	3.2
281D3	Otley silty clay loam, 9 to 14 percent slopes, severely eroded-----	455	0.1
281E2	Otley silty clay loam, 14 to 18 percent slopes, moderately eroded-----	181	*
291	Atterberry silt loam, 0 to 2 percent slopes-----	419	0.1
293C	Fayette-Chelsea-Tell complex, 5 to 9 percent slopes-----	767	0.2
293D	Fayette-Chelsea-Tell complex, 9 to 14 percent slopes-----	819	0.2
293D2	Fayette-Chelsea-Tell complex, 9 to 14 percent slopes, moderately eroded--	1,246	0.3
293E	Fayette-Chelsea-Tell complex, 14 to 18 percent slopes-----	578	0.2
293E2	Fayette-Chelsea-Tell complex, 14 to 18 percent slopes, moderately eroded	1,189	0.3
293G	Fayette-Chelsea-Tell complex, 18 to 40 percent slopes-----	1,722	0.5
353B	Tell silt loam, 2 to 5 percent slopes-----	138	*
353C	Tell silt loam, 5 to 9 percent slopes-----	135	*
353C2	Tell silt loam, 5 to 9 percent slopes, moderately eroded-----	193	*

See footnote at end of table.

Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
353D2	Tell silt loam, 9 to 14 percent slopes, moderately eroded-----	85	*
377B	Dinsdale silty clay loam, 2 to 5 percent slopes-----	896	0.2
377C	Dinsdale silty clay loam, 5 to 9 percent slopes-----	565	0.2
420	Tama silty clay loam, terrace, 0 to 2 percent slopes-----	159	*
420B	Tama silty clay loam, terrace, 2 to 5 percent slopes-----	793	0.2
422	Amana silt loam, 0 to 2 percent slopes, occasionally flooded-----	2,933	0.8
424D2	Lindley-Keswick complex, 9 to 14 percent slopes, moderately eroded-----	630	0.2
424E2	Lindley-Keswick complex, 14 to 18 percent slopes, moderately eroded-----	3,186	0.8
424E3	Lindley-Keswick complex, 14 to 18 percent slopes, severely eroded-----	1,437	0.4
424F2	Lindley-Keswick complex, 18 to 25 percent slopes, moderately eroded-----	86	*
425D2	Keswick silty clay loam, 9 to 14 percent slopes, moderately eroded-----	1,265	0.3
425D3	Keswick clay loam, 9 to 14 percent slopes, severely eroded-----	615	0.2
428B	Ely silty clay loam, 2 to 5 percent slopes-----	6,041	1.6
430	Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded-----	2,114	0.6
450	Pillot silt loam, 0 to 2 percent slopes-----	38	*
450B	Pillot silt loam, 2 to 5 percent slopes-----	623	0.2
450C	Pillot silt loam, 5 to 9 percent slopes-----	285	*
453	Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded-----	540	0.1
462B	Downs silt loam, terrace, 2 to 5 percent slopes-----	484	0.1
463B	Fayette silt loam, terrace, 2 to 5 percent slopes-----	844	0.2
463C2	Fayette silt loam, terrace, 5 to 9 percent slopes, moderately eroded-----	1,141	0.3
463D2	Fayette silt loam, terrace, 9 to 14 percent slopes, moderately eroded-----	270	*
463D3	Fayette silty clay loam, terrace, 9 to 14 percent slopes, severely eroded	86	*
463E2	Fayette silt loam, terrace, 14 to 18 percent slopes, moderately eroded---	84	*
463E3	Fayette silty clay loam, terrace, 14 to 18 percent slopes, severely eroded-----	168	*
463F2	Fayette silt loam, terrace, 18 to 25 percent slopes, moderately eroded---	149	*
463F3	Fayette silty clay loam, terrace, 18 to 25 percent slopes, severely eroded-----	83	*
484	Lawson silt loam, 0 to 2 percent slopes, occasionally flooded-----	570	0.2
587	Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded----	1,983	0.5
587+	Chequest silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	257	*
626	Hayfield silt loam, 0 to 2 percent slopes-----	732	0.2
663D2	Seaton silt loam, 9 to 14 percent slopes, moderately eroded-----	207	*
663E2	Seaton silt loam, 14 to 18 percent slopes, moderately eroded-----	92	*
663E3	Seaton silt loam, 14 to 18 percent slopes, severely eroded-----	124	*
663F2	Seaton silt loam, 18 to 25 percent slopes, moderately eroded-----	200	*
687	Watkins silt loam, 0 to 2 percent slopes, rarely flooded-----	325	*
687B	Watkins silt loam, 2 to 5 percent slopes, rarely flooded-----	197	*
688	Kosztz silt loam, 0 to 2 percent slopes, rarely flooded-----	3,780	1.0
771B	Waubek silt loam, 2 to 5 percent slopes-----	262	*
771C2	Waubek silt loam, 5 to 9 percent slopes, moderately eroded-----	310	*
792D2	Armstrong silty clay loam, 9 to 14 percent slopes, moderately eroded-----	2,914	0.8
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes-----	518	0.1
876C	Ladoga silt loam, terrace, 5 to 9 percent slopes-----	777	0.2
876C2	Ladoga silt loam, terrace, 5 to 9 percent slopes, moderately eroded-----	633	0.2
876D2	Ladoga silt loam, terrace, 9 to 14 percent slopes, moderately eroded-----	333	*
881B	Otley silty clay loam, terrace, 2 to 5 percent slopes-----	256	*
911B	Colo-Ely complex, 2 to 5 percent slopes-----	34,869	9.3
993D2	Gara-Armstrong complex, 9 to 14 percent slopes, moderately eroded-----	1,499	0.4
993E2	Gara-Armstrong complex, 14 to 18 percent slopes, moderately eroded-----	3,029	0.8
993F2	Gara-Armstrong complex, 18 to 25 percent slopes, moderately eroded-----	75	*
1160	Walford silt loam, terrace, 0 to 2 percent slopes-----	203	*
1220	Nodaway silt loam, 0 to 2 percent slopes, channeled, frequently flooded--	915	0.2
1291	Atterberry silt loam, terrace, 0 to 2 percent slopes-----	660	0.2
1354	Aquents, ponded-----	123	*
1442B	Tama-Sparta-Pillot complex, 2 to 5 percent slopes-----	180	*
1442C	Tama-Sparta-Pillot complex, 5 to 9 percent slopes-----	322	*
1442C2	Tama-Sparta-Pillot complex, 5 to 9 percent slopes, moderately eroded-----	466	0.1
1442D2	Tama-Sparta-Pillot complex, 9 to 14 percent slopes, moderately eroded----	1,069	0.3
1442E2	Tama-Sparta-Pillot complex, 14 to 18 percent slopes, moderately eroded---	562	0.1
1540	Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded-----	10,797	2.9
2219	Ella silt loam, 0 to 2 percent slopes, rarely flooded-----	161	*

See footnote at end of table.

Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
2219B	Ella silt loam, 2 to 5 percent slopes, rarely flooded-----	327	*
2219C2	Ella silt loam, 5 to 9 percent slopes, moderately eroded, rarely flooded	59	*
2422	Amana-Nodaway-Lawson complex, 0 to 2 percent slopes, occasionally flooded	2,849	0.8
4946	Udorthents-Interstate highway complex, 0 to 5 percent slopes-----	964	0.3
5010	Pits, sand and gravel-----	73	*
5040	Udorthents, loamy-----	490	0.1
6220	Nodaway silt loam, 0 to 2 percent slopes, frequently flooded-----	495	0.1
6422	Amana silt loam, 0 to 2 percent slopes, frequently flooded-----	1,701	0.5
AW	Animal waste lagoon-----	9	*
SL	Sewage lagoon-----	70	*
W	Water-----	2,744	0.7
	Total-----	376,100	100.0

* Less than 0.1 percent.

Agronomy

This section provides some general information about managing the soils for crops and for hay and pasture. The Iowa corn suitability rating system and the system of land capability classification used by the Natural Resources Conservation Service are explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil. Prime farmland is described, and interpretations for agricultural waste management are provided.

Planners of management systems for individual fields or farms should consider obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Cropland Management Considerations

The management concerns affecting the use of the detailed soil map units in the county for crops are shown in the table “Cropland Management Considerations” at the end of this section. The main concerns in managing nonirrigated cropland are conserving moisture, controlling wind erosion and water erosion, and maintaining soil fertility.

Conserving moisture consists primarily of reducing the evaporation and runoff rates and increasing the water infiltration rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Generally, a combination of several practices is needed to control wind erosion and water erosion. Conservation tillage, stripcropping, field windbreaks, contour farming, conservation cropping systems, crop residue management, terraces, diversions, and grassed waterways help to prevent excessive soil loss.

Measures that are effective in maintaining soil fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the considerations shown in the table cannot be easily overcome. These are channels, flooding, gullies, and ponding.

Additional considerations are as follows:

Lime content, limited available water capacity, limited content of organic matter, potential poor tilth and compaction, and restricted permeability.—These limitations can be minimized by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer to soils that have a high content of lime.

Potential for ground-water contamination.—The proper use of nutrients and pesticides can reduce the risk of ground-water contamination.

Potential for surface-water contamination.—The risk of surface-water contamination can be reduced by the proper use of nutrients and pesticides and by conservation farming practices that reduce the runoff rate.

Surface crusting.—This limitation retards seedling development after periods of heavy rainfall.

Surface rock fragments.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Surface stones.—Stones or boulders on or near the surface can hinder normal tillage unless they are removed.

Salt content.—In areas where this is a limitation, only salt-tolerant crops should be grown.

On irrigated soils the main management concerns are efficient water use, nutrient management, control of erosion, pest and weed control, and timely planting and harvesting for a successful crop. An irrigation system that provides optimum control and distribution of water at minimum cost is needed. Overirrigation wastes water, leaches plant nutrients, and causes erosion. Also, it can increase wetness and soil salinity.

Explanation of Criteria

Acid soil.—The pH is less than 6.1.

Channeled.—The word “channeled” is included in the map unit name.

Dense layer.—The bulk density is 1.80 g/cc or greater within the soil profile.

Depth to rock.—The depth to bedrock is less than 40 inches.

Eroded.—The word “eroded” is included in the map unit name.

Excessive permeability.—Saturated hydraulic conductivity is 42 micrometers per second or more within the soil profile.

Flooding.—Flooding is occasional, frequent, or very frequent.

Gullied.—The word “gullied” is included in the map unit name.

High content of organic matter.—The surface layer has more than 20 percent organic matter.

Lime content.—The pH is 7.4 or more in the surface layer, or the wind erodibility group is 4L.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Limited content of organic matter.—The content of organic matter is 2 percent or less in the surface layer.

Ponding.—Ponding duration is assigned to the map unit component. Water is above the surface.

Potential poor tilth and compaction.—The content of clay is 27 percent or more in the surface layer.

Potential for ground-water contamination (by nutrients or pesticides).—The depth to a seasonal high water table is 4 feet or less, the saturated hydraulic conductivity of any layer is more than 42 micrometers per second, or the depth to bedrock is less than 60 inches.

Potential for surface-water contamination (by nutrients or pesticides).—The map unit component is occasionally, frequently, or very frequently flooded, is subject to ponding, is assigned to hydrologic group C or D and has a slope of more than 2 percent, is assigned to hydrologic group A and has a slope of more than 6 percent, or is assigned to hydrologic group B, has a slope of 3 percent or more, and has a K factor of more than 0.17.

Previously eroded.—The word “eroded” is included in the map unit name.

Restricted permeability.—Saturated hydraulic conductivity is less than 0.42 micrometer per second within the soil profile.

Salt content.—The electrical conductivity is 4 or more in the surface layer or 8 or more within a depth of 30 inches.

Slope (equipment limitation).—The slope is more than 15 percent.

Surface crusting.—The content of clay is 27 percent or more and the content of organic matter is 2 percent or less in the surface layer.

Surface rock fragments (equipment limitation).—The terms describing the texture of the surface layer include any rock fragment modifier, except for gravelly, channery, stony, very stony, extremely stony, bouldery, very bouldery, and extremely bouldery.

Surface stones (equipment limitation).—The word “stony” or “bouldery” is included in the description of the surface layer, or 0.01 to 0.1 percent of the surface is covered by stones or boulders.

Water erosion.—Either the slope is 6 percent or more, or the slope is more than 3 percent and less than 6 percent and the surface layer is not sandy.

Water table.—A water table is within 2.5 feet of the surface.

Wind erosion.—The wind erodibility group is 1, 2, 3, or 4L.

Hydrologic groups are described under the heading “Water Features.” Erosion factors (e.g., K factor) and wind erodibility groups are described under the heading “Physical Properties.”

Cropland Management Considerations

(See text for a description of the considerations listed in this table)

Map symbol and soil name	Pct. of map unit	Cropland management considerations
5B: Ackmore-----	45	Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
Colo-----	35	Potential poor tilth and compaction Potential for ground-water contamination Water erosion Water table
7: Wiota, rarely flooded-----	100	No major considerations
7B: Wiota, rarely flooded-----	100	Potential for surface-water contamination Water erosion
8B: Judson-----	95	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
24C2: Shelby, moderately eroded----	85	Potential for surface-water contamination Previously eroded Water erosion
24D2: Shelby, moderately eroded----	70	Potential for surface-water contamination Previously eroded Water erosion
24D3: Shelby, severely eroded-----	90	Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion
24E2: Shelby, moderately eroded----	85	Slope Potential for surface-water contamination Previously eroded Water erosion
24E3: Shelby, severely eroded-----	95	Slope Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
41: Sparta-----	100	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
41B: Sparta-----	100	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
41C: Sparta-----	85	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
41D: Sparta-----	75	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
43: Bremer, rarely flooded-----	100	Potential poor tilth and compaction Potential for ground-water contamination Water table
51: Vesser, occasionally flooded	95	Acid soil Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
54: Zook, occasionally flooded---	100	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
54+: Zook, occasionally flooded, overwash-----	100	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
63C: Chelsea-----	90	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
63E: Chelsea-----	95	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
63G: Chelsea-----	95	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
65D2: Lindley, moderately eroded---	85	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65D3: Lindley, severely eroded----	85	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65E2: Lindley, moderately eroded---	85	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65E3: Lindley, severely eroded----	85	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65F: Lindley-----	100	Slope Limited content of organic matter Potential for surface-water contamination Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
65F2: Lindley, moderately eroded---	80	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65F3: Lindley, severely eroded----	90	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
65G: Lindley-----	100	Slope Limited content of organic matter Potential for surface-water contamination Water erosion
75: Givin-----	95	Acid soil Potential for ground-water contamination Water table
76B: Ladoga-----	95	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
76C: Ladoga-----	85	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
76C2: Ladoga, moderately eroded----	95	Acid soil Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
76D: Ladoga-----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
76D2: Ladoga, moderately eroded----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
76D3: Ladoga, severely eroded-----	85	Acid soil Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
76E2: Ladoga, moderately eroded----	70	Acid soil Slope Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
76E3: Ladoga, severely eroded-----	85	Acid soil Slope Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
80B: Clinton-----	100	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
80C: Clinton-----	95	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
80C2: Clinton, moderately eroded---	85	Acid soil Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
80D: Clinton-----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
80D2: Clinton, moderately eroded---	85	Acid soil Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
80D3: Clinton, severely eroded-----	75	Acid soil Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
80E2: Clinton, moderately eroded---	90	Acid soil Slope Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
80E3: Clinton, severely eroded-----	70	Acid soil Slope Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
80F2: Clinton, moderately eroded---	90	Acid soil Slope Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
83B: Kenyon-----	75	Potential for ground-water contamination Potential for surface-water contamination Water erosion
83C: Kenyon-----	80	Potential for ground-water contamination Potential for surface-water contamination Water erosion
83C2: Kenyon, moderately eroded---	85	Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
83D2: Kenyon, moderately eroded---	80	Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
88: Nevin, rarely flooded-----	90	Potential poor tilth and compaction Potential for ground-water contamination Water table
93D2: Shelby, moderately eroded----	50	Potential for surface-water contamination Previously eroded Water erosion
Adair, moderately eroded----	35	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
93D3: Shelby, severely eroded-----	50	Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion
Adair, severely eroded-----	30	Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion Water table
93E2: Shelby, moderately eroded----	60	Slope Potential for surface-water contamination Previously eroded Water erosion
Adair, moderately eroded----	35	Slope Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
119: Muscatine-----	95	Potential poor tilth and compaction Potential for ground-water contamination Water table
120B: Tama-----	95	Potential for surface-water contamination Water erosion
120C: Tama-----	85	Potential for surface-water contamination Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
120C2: Tama, moderately eroded-----	75	Potential for surface-water contamination Previously eroded Water erosion
120D2: Tama, moderately eroded-----	85	Potential for surface-water contamination Previously eroded Water erosion
120D3: Tama, severely eroded-----	80	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
120E2: Tama, moderately eroded-----	80	Slope Potential for surface-water contamination Previously eroded Water erosion
122: Sperry-----	95	Ponding Potential for ground-water contamination Potential for surface-water contamination Water table
133: Colo, occasionally flooded---	90	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
133+: Colo, occasionally flooded, overwash-----	90	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
162B: Downs-----	95	Potential for surface-water contamination Water erosion
162C: Downs-----	85	Potential for surface-water contamination Water erosion
162C2: Downs, moderately eroded-----	85	Potential for surface-water contamination Previously eroded Water erosion
162D2: Downs, moderately eroded-----	85	Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
162D3: Downs, severely eroded-----	80	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
162E2: Downs, moderately eroded-----	75	Slope Potential for surface-water contamination Previously eroded Water erosion
162E3: Downs, severely eroded-----	75	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163B: Fayette-----	95	Potential for surface-water contamination Water erosion
163C: Fayette-----	90	Potential for surface-water contamination Water erosion
163C2: Fayette, moderately eroded---	85	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163D: Fayette-----	85	Potential for surface-water contamination Water erosion
163D2: Fayette, moderately eroded---	65	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163D3: Fayette, severely eroded-----	60	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163E: Fayette-----	75	Slope Potential for surface-water contamination Water erosion
163E2: Fayette, moderately eroded---	70	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
163E3: Fayette, severely eroded----	70	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163F: Fayette-----	75	Slope Potential for surface-water contamination Water erosion
163F2: Fayette, moderately eroded---	70	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163F3: Fayette, severely eroded----	70	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
163G: Fayette-----	85	Slope Potential for surface-water contamination Water erosion
165: Stronghurst-----	95	Potential for ground-water contamination Water table
171C2: Bassett, moderately eroded---	85	Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
171D2: Bassett, moderately eroded---	80	Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
171D3: Bassett, severely eroded----	75	Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
171E2: Bassett, moderately eroded---	80	Slope Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
171E3: Bassett, severely eroded-----	75	Slope Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
172: Wabash, occasionally flooded	100	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Restricted permeability Water table
175: Dickinson-----	100	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
175B: Dickinson-----	95	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Water erosion Wind erosion
175C: Dickinson-----	85	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
178: Waukee-----	90	Acid soil Excessive permeability Potential for ground-water contamination
178B: Waukee-----	100	Acid soil Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
178C: Waukee-----	100	Acid soil Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
179D2: Gara, moderately eroded-----	80	Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
179D3: Gara, severely eroded-----	70	Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion
179E2: Gara, moderately eroded-----	85	Slope Potential for surface-water contamination Previously eroded Water erosion
179E3: Gara, severely eroded-----	75	Slope Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion
179F2: Gara, moderately eroded-----	85	Slope Potential for surface-water contamination Previously eroded Water erosion
179F3: Gara, severely eroded-----	90	Slope Limited content of organic matter Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Surface crusting Water erosion
180: Keomah-----	95	Acid soil Potential for ground-water contamination Water table
192D2: Adair, moderately eroded----	75	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
192D3: Adair, severely eroded-----	70	Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
220: Nodaway, occasionally flooded	85	Flooding Potential for ground-water contamination Potential for surface-water contamination
279: Taintor-----	90	Potential poor tilth and compaction Potential for ground-water contamination Water table
280: Mahaska-----	95	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Water table
281B: Otley-----	100	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
281C: Otley-----	90	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
281C2: Otley, moderately eroded----	85	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
281D2: Otley, moderately eroded----	80	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
281D3: Otley, severely eroded-----	80	Acid soil Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
281E2: Otley, moderately eroded-----	85	Acid soil Slope Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
291: Atterberry-----	90	Potential for ground-water contamination Water table
293C: Fayette-----	45	Potential for surface-water contamination Water erosion
Chelsea-----	35	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
Tell-----	20	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
293D: Fayette-----	45	Potential for surface-water contamination Water erosion
Chelsea-----	35	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
Tell-----	20	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
293D2: Fayette, moderately eroded---	45	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Chelsea, moderately eroded---	35	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Wind erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
293D2: Tell, moderately eroded-----	20	Excessive permeability Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
293E: Fayette-----	40	Slope Potential for surface-water contamination Water erosion
Chelsea-----	35	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
Tell-----	25	Slope Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
293E2: Fayette, moderately eroded---	40	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Chelsea, moderately eroded---	35	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Tell, moderately eroded-----	25	Slope Excessive permeability Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
293G: Fayette-----	40	Slope Potential for surface-water contamination Water erosion Wind erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
293G: Chelsea-----	35	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
Tell-----	25	Slope Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
353B: Tell-----	85	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
353C: Tell-----	90	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
353C2: Tell, moderately eroded-----	90	Excessive permeability Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
353D2: Tell, moderately eroded-----	90	Excessive permeability Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
377B: Dinsdale-----	100	Potential for ground-water contamination Potential for surface-water contamination Water erosion
377C: Dinsdale-----	85	Potential for ground-water contamination Potential for surface-water contamination Water erosion
420: Tama, terrace-----	100	No major considerations
420B: Tama, terrace-----	100	Potential for surface-water contamination Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
422: Amana, occasionally flooded--	90	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
424D2: Lindley, moderately eroded---	50	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
Keswick, moderately eroded---	35	Acid soil Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
424E2: Lindley, moderately eroded---	45	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
Keswick, moderately eroded---	40	Acid soil Slope Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
424E3: Lindley, severely eroded----	45	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
Keswick, severely eroded----	40	Acid soil Slope Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
424F2: Lindley, moderately eroded---	65	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
424F2: Keswick, moderately eroded---	25	Acid soil Slope Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
425D2: Keswick, moderately eroded---	90	Acid soil Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
425D3: Keswick, severely eroded----	60	Acid soil Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
428B: Ely-----	95	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
430: Ackmore, occasionally flooded	100	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
450: Pillot-----	100	Potential for ground-water contamination
450B: Pillot-----	90	Potential for ground-water contamination Potential for surface-water contamination Water erosion
450C: Pillot-----	85	Potential for ground-water contamination Potential for surface-water contamination Water erosion
453: Tuskeego, rarely flooded----	75	Potential for ground-water contamination Restricted permeability Water table
462B: Downs, terrace-----	90	Potential for surface-water contamination Water erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
463B: Fayette, terrace-----	100	Potential for surface-water contamination Water erosion
463C2: Fayette, moderately eroded, terrace-----	90	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463D2: Fayette, moderately eroded, terrace-----	90	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463D3: Fayette, severely eroded, terrace-----	80	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463E2: Fayette, moderately eroded, terrace-----	90	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463E3: Fayette, severely eroded, terrace-----	90	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463F2: Fayette, moderately eroded, terrace-----	85	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
463F3: Fayette, severely eroded, terrace-----	90	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
484: Lawson, occasionally flooded	80	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
587: Chequest, occasionally flooded-----	95	Acid soil Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
587+: Chequest, occasionally flooded, overwash-----	95	Acid soil Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
626: Hayfield-----	90	Acid soil Excessive permeability Potential for ground-water contamination Water table
663D2: Seaton, moderately eroded----	85	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
663E2: Seaton, moderately eroded----	85	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
663E3: Seaton, severely eroded-----	80	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
663F2: Seaton, moderately eroded----	80	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
687: Watkins, rarely flooded-----	90	No major considerations
687B: Watkins, rarely flooded-----	100	Potential for surface-water contamination Water erosion
688: Koszta, rarely flooded-----	95	Potential for ground-water contamination Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
771B: Waubee-----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
771C2: Waubee, moderately eroded---	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
792D2: Armstrong, moderately eroded	75	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
876B: Ladoga, terrace-----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
876C: Ladoga, terrace-----	80	Acid soil Potential for ground-water contamination Potential for surface-water contamination Water erosion
876C2: Ladoga, moderately eroded, terrace-----	85	Acid soil Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
876D2: Ladoga, moderately eroded, terrace-----	90	Acid soil Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
881B: Otley, terrace-----	95	Acid soil Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
911B: Colo-----	55	Potential poor tilth and compaction Potential for ground-water contamination Water erosion Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
911B: Ely-----	35	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water erosion Water table
993D2: Gara, moderately eroded-----	45	Potential for surface-water contamination Previously eroded Water erosion
Armstrong, moderately eroded	35	Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
993E2: Gara, moderately eroded-----	45	Slope Potential for surface-water contamination Previously eroded Water erosion
Armstrong, moderately eroded	40	Slope Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
993F2: Gara, moderately eroded-----	65	Slope Potential for surface-water contamination Previously eroded Water erosion
Armstrong, moderately eroded	25	Slope Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Water table
1160: Walford, terrace-----	95	Acid soil Potential for ground-water contamination Water table
1220: Nodaway, frequently flooded, channeled-----	75	Flooding Channeled Potential for ground-water contamination Potential for surface-water contamination
1291: Atterberry, terrace-----	95	Potential for ground-water contamination Water table

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
1354: Aguents, ponded-----	100	Onsite investigation required
1442B: Tama-----	40	Potential for surface-water contamination Water erosion Wind erosion
Sparta-----	35	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
Pillot-----	20	Potential for ground-water contamination Potential for surface-water contamination Water erosion
1442C: Tama-----	40	Potential for surface-water contamination Water erosion Wind erosion
Sparta-----	35	Acid soil Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
Pillot-----	20	Potential for ground-water contamination Potential for surface-water contamination Water erosion
1442C2: Tama, moderately eroded-----	40	Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Sparta, moderately eroded----	35	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Wind erosion
Pillot, moderately eroded----	20	Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
1442D2: Tama, moderately eroded-----	40	Potential for surface-water contamination Previously eroded Water erosion Wind erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
1442D2: Sparta, moderately eroded----	35	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Pillot, moderately eroded----	20	Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
1442E2: Tama, moderately eroded-----	40	Slope Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Sparta, moderately eroded----	35	Slope Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Pillot, moderately eroded----	20	Slope Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Previously eroded Surface crusting Water erosion
1540: Quiver, frequently flooded---	40	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
Zook, frequently flooded-----	30	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
Klum, frequently flooded-----	15	Flooding Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion

Cropland Management Considerations--Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
2219: Ella, rarely flooded-----	70	Potential for ground-water contamination
2219B: Ella, rarely flooded-----	75	Potential for ground-water contamination Potential for surface-water contamination Water erosion
2219C2: Ella, moderately eroded-----	80	Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Previously eroded Water erosion
2422: Amana, occasionally flooded--	50	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
Nodaway, occasionally flooded	30	Flooding Potential for ground-water contamination Potential for surface-water contamination
Lawson, occasionally flooded	20	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
4946: Udorthents-----	65	Onsite investigation required
Interstate highway-----	30	Not applicable
5010. Pits, sand and gravel		
5040: Udorthents-----	100	Restricted permeability
6220: Nodaway, frequently flooded--	85	Flooding Potential for ground-water contamination Potential for surface-water contamination
6422: Amana, frequently flooded----	90	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
AW. Animal waste lagoon		
SL. Sewage lagoon		
W. Water		

Crop Yield Estimates

The tables “Land Capability, Corn Suitability Rating, and Yields per Acre of Crops” and “Land Capability and Yields per Acre of Pasture” are described in this section. Crops other than those shown in the tables are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the

soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

[Reference: United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. USDA Handbook 210.]

Corn Suitability Rating

The corn suitability rating (CSR) system was developed in Iowa to rate the productivity of each different kind of soil for row crops. CSRs provide a relative ranking of all soils mapped in the State of Iowa. They can be used to compare the potential yield production of one soil with that of other soils. Ratings range from 5 to 100. A rating of 5 indicates severe limitations for row crop production. Soil properties and weather conditions are the dominant factors that affect productivity.

Crop Yields

The average yields per acre that can be expected of the principal crops under a high level of management are shown in the table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Pasture Yields

Some pasture yields are expressed in the table in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about forage yields other than those shown in the table.

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops

(The following crop yield estimates are based on a high level of management and are determined through recent research conducted by Iowa State University. They are for nonirrigated areas. See text for additional information. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
5B----- Ackmore----- Colo-----	45 35	2w 2w	83	169	45	80
7----- Wiota, rarely flooded	100	1	90	190	52	92
7B----- Wiota, rarely flooded	100	2e	85	187	54	96
8B----- Judson	95	2e	90	197	53	87
24C2----- Shelby, moderately eroded	85	3e	58	153	42	63
24D2----- Shelby, moderately eroded	70	3e	48	144	39	62
24D3----- Shelby, severely eroded	90	4e	45	126	36	60
24E2----- Shelby, moderately eroded	85	4e	38	112	33	54
24E3----- Shelby, severely eroded	95	6e	35	---	---	---
41----- Sparta	100	4s	45	82	27	49
41B----- Sparta	100	4s	40	79	26	47
41C----- Sparta	85	4s	25	74	24	44
41D----- Sparta	75	6s	15	---	---	---
43----- Bremer, rarely flooded	100	2w	82	172	47	83
51----- Vesser, occasionally flooded	95	2w	70	163	44	72
54----- Zook, occasionally flooded	100	2w	70	158	42	69

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
54+----- Zook, occasionally flooded, overwash	100	2w	75	162	44	72
63C----- Chelsea	90	4s	36	69	19	34
63E----- Chelsea	95	7s	11	---	---	---
63G----- Chelsea	95	7s	5	---	---	---
65D2----- Lindley, moderately eroded	85	4e	38	93	32	53
65D3----- Lindley, severely eroded	85	6e	35	---	---	---
65E2----- Lindley, moderately eroded	85	6e	28	---	---	---
65E3----- Lindley, severely eroded	85	7e	25	---	---	---
65F----- Lindley	100	7e	10	---	---	---
65F2----- Lindley, moderately eroded	80	7e	8	---	---	---
65F3----- Lindley, severely eroded	90	7e	5	---	---	---
65G----- Lindley	100	7e	5	---	---	---
75----- Givin	95	1	85	183	50	81
76B----- Ladoga	95	2e	85	183	50	81
76C----- Ladoga	85	3e	70	176	48	79
76C2----- Ladoga, moderately eroded	95	3e	65	173	47	76
76D----- Ladoga	90	3e	60	167	45	74
76D2----- Ladoga, moderately eroded	90	3e	55	164	44	72
76D3----- Ladoga, severely eroded	85	4e	50	136	41	67

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
76E2----- Ladoga, moderately eroded	70	4e	45	117	38	62
76E3----- Ladoga, severely eroded	85	6e	42	---	---	---
80B----- Clinton	100	2e	80	172	47	76
80C----- Clinton	95	3e	65	166	45	74
80C2----- Clinton, moderately eroded	85	3e	60	162	44	72
80D----- Clinton	90	3e	55	150	42	69
80D2----- Clinton, moderately eroded	85	3e	50	149	41	67
80D3----- Clinton, severely eroded	75	4e	45	130	38	62
80E2----- Clinton, moderately eroded	90	4e	40	126	35	57
80E3----- Clinton, severely eroded	70	6e	35	---	---	---
80F2----- Clinton, moderately eroded	90	6e	20	---	---	---
83B----- Kenyon	75	2e	87	194	48	92
83C----- Kenyon	80	3e	74	187	47	91
83C2----- Kenyon, moderately eroded	85	3e	69	183	45	88
83D2----- Kenyon, moderately eroded	80	3e	58	173	43	83
88----- Nevin, rarely flooded	90	1	92	198	55	98
93D2----- Shelby, moderately eroded-----	50	3e	35	116	39	62
Adair, moderately eroded	35	4e				

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
93D3----- Shelby, severely eroded	50	4e	20	97	36	41
Adair, severely eroded--	30	6e				
93E2----- Shelby, moderately eroded-----	60	4e	15	82	23	34
Adair, moderately eroded	35	6e				
119----- Muscatine	95	1	100	210	57	102
120B----- Tama	95	2e	95	206	56	100
120C----- Tama	85	3e	80	200	54	95
120C2----- Tama, moderately eroded	75	3e	78	196	53	95
120D2----- Tama, moderately eroded	85	3e	68	184	50	88
120D3----- Tama, severely eroded	80	4e	65	176	47	85
120E2----- Tama, moderately eroded	80	4e	58	146	44	79
122----- Sperry	95	3w	63	155	42	68
133----- Colo, occasionally flooded	90	2w	80	170	46	75
133+----- Colo, occasionally flooded, overwash	90	2w	85	173	47	77
162B----- Downs	95	2e	90	195	53	92
162C----- Downs	85	3e	75	190	51	92
162C2----- Downs, moderately eroded	85	3e	73	184	50	86
162D2----- Downs, moderately eroded	85	3e	63	181	47	81
162D3----- Downs, severely eroded	80	4e	60	165	44	79
162E2----- Downs, moderately eroded	75	4e	53	139	44	71
162E3----- Downs, severely eroded	75	6e	50	---	---	---

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
163B----- Fayette	95	2e	85	184	50	89
163C----- Fayette	90	3e	70	178	48	86
163C2----- Fayette, moderately eroded	85	3e	68	173	47	84
163D----- Fayette	85	3e	60	168	45	81
163D2----- Fayette, moderately eroded	65	3e	58	153	44	79
163D3----- Fayette, severely eroded	60	4e	55	140	41	74
163E----- Fayette	75	4e	50	134	40	71
163E2----- Fayette, moderately eroded	70	4e	48	122	38	68
163E3----- Fayette, severely eroded	70	6e	45	---	---	---
163F----- Fayette	75	6e	30	---	---	---
163F2----- Fayette, moderately eroded	70	6e	28	---	---	---
163F3----- Fayette, severely eroded	70	6e	25	---	---	---
163G----- Fayette	85	7e	20	---	---	---
165----- Stronghurst	95	1	90	169	48	86
171C2----- Bassett, moderately eroded	85	3e	63	172	42	83
171D2----- Bassett, moderately eroded	80	3e	53	165	39	77
171D3----- Bassett, severely eroded	75	3e	50	161	37	73
171E2----- Bassett, moderately eroded	80	4e	43	136	34	67

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
171E3----- Bassett, severely eroded	75	6e	40	---	---	---
172----- Wabash, occasionally flooded	100	3w	45	86	29	47
175----- Dickinson	100	3s	60	112	38	67
175B----- Dickinson	95	3e	55	111	37	65
175C----- Dickinson	85	3e	40	103	35	62
178----- Waukee	90	2s	79	124	69	42
178B----- Waukee	100	2e	74	122	40	67
178C----- Waukee	100	3e	54	117	39	64
179D2----- Gara, moderately eroded	80	4e	43	134	36	58
179D3----- Gara, severely eroded	70	6e	40	---	---	---
179E2----- Gara, moderately eroded	85	6e	33	---	---	---
179E3----- Gara, severely eroded	75	6e	30	---	---	---
179F2----- Gara, moderately eroded	85	7e	13	---	---	---
179F3----- Gara, severely eroded	90	7e	10	---	---	---
180----- Keomah	95	2w	76	163	44	72
192D2----- Adair, moderately eroded	75	4e	15	78	18	29
192D3----- Adair, severely eroded	70	6e	12	---	---	---
220----- Nodaway, occasionally flooded	85	2w	87	193	53	84
279----- Taintor	90	2w	88	191	52	85
280----- Mahaska	95	1	95	203	55	91

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
281B----- Otley	100	2e	90	195	53	87
281C----- Otley	90	3e	75	189	51	84
281C2----- Otley, moderately eroded	85	3e	70	184	50	82
281D2----- Otley, moderately eroded	80	3e	60	168	47	77
281D3----- Otley, severely eroded	80	4e	55	153	44	73
281E2----- Otley, moderately eroded	85	4e	50	152	41	68
291----- Atterberry	90	1	95	185	49	87
293C----- Fayette----- Chelsea----- Tell-----	45 35 20	3e 4s 3e	40	124	34	60
293D----- Fayette----- Chelsea----- Tell-----	45 35 20	3e 6s 3e	30	97	30	55
293D2----- Fayette, moderately eroded----- Chelsea, moderately eroded----- Tell, moderately eroded	45 35 20	3e 6s 4e	28	94	29	53
293E----- Fayette----- Chelsea----- Tell-----	40 35 25	4e 7s 4e	20	58	16	28
293E2----- Fayette, moderately eroded----- Chelsea, moderately eroded----- Tell, moderately eroded	40 35 25	4e 7s 4e	18	56	15	27
293G----- Fayette----- Chelsea----- Tell-----	40 35 25	7e 7s 6e	5	---	---	---
353B----- Tell	85	2e	58	127	42	74
353C----- Tell	90	3e	38	125	40	71

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
353C2----- Tell, moderately eroded	90	3e	33	121	39	69
353D2----- Tell, moderately eroded	90	4e	18	112	36	64
377B----- Dinsdale	100	2e	90	198	54	96
377C----- Dinsdale	85	3e	75	187	52	93
420----- Tama, terrace	100	1	100	210	57	102
420B----- Tama, terrace	100	2e	95	206	56	100
422----- Amana, occasionally flooded	90	2w	85	181	49	80
424D2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	50 35	4e 4e	15	92	29	48
424E2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	45 40	6e 6e	5	---	---	---
424E3----- Lindley, severely eroded Keswick, severely eroded	45 40	7e 7e	5	---	---	---
424F2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	65 25	7e 7e	5	---	---	---
425D2----- Keswick, moderately eroded	90	4e	12	59	18	30
425D3----- Keswick, severely eroded	60	6e	9	---	---	---
428B----- Ely	95	2e	88	196	53	87
430----- Ackmore, occasionally flooded	100	2w	83	174	47	78
450----- Pillot	100	2e	73	150	50	90

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
450B----- Pillot	90	2e	68	155	48	85
450C----- Pillot	85	3e	53	152	45	80
453----- Tuskeego, rarely flooded	75	3w	53	141	35	58
462B----- Downs, terrace	90	2e	90	196	51	92
463B----- Fayette, terrace	100	2e	85	184	50	89
463C2----- Fayette, moderately eroded, terrace	90	3e	68	174	47	84
463D2----- Fayette, moderately eroded, terrace	90	3e	58	161	44	79
463D3----- Fayette, severely eroded, terrace	80	4e	55	154	44	79
463E2----- Fayette, moderately eroded, terrace	90	4e	48	127	38	68
463E3----- Fayette, severely eroded, terrace	90	6e	45	---	---	---
463F2----- Fayette, moderately eroded, terrace	85	6e	28	---	---	---
463F3----- Fayette, severely eroded, terrace	90	6e	25	---	---	---
484----- Lawson, occasionally flooded	80	2w	90	191	53	94
587----- Chequest, occasionally flooded	95	2w	65	123	40	66
587+----- Chequest, occasionally flooded, overwash	95	2w	67	154	42	68
626----- Hayfield	90	2s	67	118	37	72
663D2----- Seaton, moderately eroded	85	3e	58	128	44	79

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
663E2----- Seaton, moderately eroded	85	4e	48	114	38	68
663E3----- Seaton, severely eroded	80	6e	45	---	---	---
663F2----- Seaton, moderately eroded	80	6e	28	---	---	---
687----- Watkins, rarely flooded	90	1	85	190	52	83
687B----- Watkins, rarely flooded	100	2e	80	187	51	83
688----- Koszta, rarely flooded	95	1	85	190	52	85
771B----- Waubeeek	90	2e	85	192	52	93
771C2----- Waubeeek, moderately eroded	90	3e	68	177	48	85
792D2----- Armstrong, moderately eroded	75	4e	13	77	21	34
876B----- Ladoga, terrace	90	2e	85	183	50	81
876C----- Ladoga, terrace	80	3e	70	178	48	79
876C2----- Ladoga, moderately eroded, terrace	85	3e	65	173	47	76
876D2----- Ladoga, moderately eroded, terrace	90	3e	55	164	44	72
881B----- Otley, terrace	95	2e	90	195	53	86
911B----- Colo----- Ely-----	55 35	2w 2e	68	180	46	82
993D2----- Gara, moderately eroded Armstrong, moderately eroded-----	45 35	4e 4e	20	106	36	58
993E2----- Gara, moderately eroded Armstrong, moderately eroded-----	45 40	6e 6e	10	---	---	---

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn Bu	Soybeans Bu	Oats Bu
993F2----- Gara, moderately eroded Armstrong, moderately eroded-----	65 25	7e 7e	5	---	---	---
1160----- Walford, terrace	95	2w	63	155	42	74
1220----- Nodaway, frequently flooded, channeled	75	5w	25	---	---	---
1291----- Atterberry, terrace	95	1	95	189	51	92
1354----- Aguents, ponded	100	7w	5	---	---	---
1442B----- Tama----- Sparta----- Pillot-----	40 35 20	2e 4s 2e	70	145	49	100
1442C----- Tama----- Sparta----- Pillot-----	40 35 20	3e 4s 3e	60	139	43	76
1442C2----- Tama, moderately eroded Sparta, moderately eroded----- Pillot, moderately eroded-----	40 35 20	3e 4s 3e	58	135	46	83
1442D2----- Tama, moderately eroded Sparta, moderately eroded----- Pillot, moderately eroded-----	40 35 20	3e 6s 3e	43	104	43	77
1442E2----- Tama, moderately eroded Sparta, moderately eroded----- Pillot, moderately eroded-----	40 35 20	4e 6s 4e	38	104	30	50
1540----- Quiver, frequently flooded----- Zook, frequently flooded Klum, frequently flooded	40 30 15	5w 5w 5w	5	---	---	---
2219----- Ella, rarely flooded	70	1	82	175	48	86
2219B----- Ella, rarely flooded	75	2e	78	167	46	85

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
2219C2----- Ella, moderately eroded	80	3e	58	156	43	79
2422----- Amana, occasionally flooded-----	50	2w	57	187	43	77
Nodaway, occasionally flooded-----	30	2w				
Lawson, occasionally flooded-----	20	2w				
4946. Udorthents-Interstate highway						
5010. Pits, sand and gravel						
5040. Udorthents						
6220----- Nodaway, frequently flooded	85	4w	35	---	---	---
6422----- Amana, frequently flooded	90	4w	51	---	---	---
AW. Animal waste lagoon						
SL. Sewage lagoon						
W. Water						

Land Capability and Yields per Acre of Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
5B----- Ackmore----- Colo-----	45 35	2w 2w	4.0	5.5	3.3	7.1
7----- Wiota, rarely flooded	100	1	6.5	6.3	3.8	11.4
7B----- Wiota, rarely flooded	100	2e	6.7	6.6	3.9	11.2
8B----- Judson	95	2e	6.7	6.5	3.9	11.2
24C2----- Shelby, moderately eroded	85	3e	5.2	5.1	3.1	8.7
24D2----- Shelby, moderately eroded	70	3e	4.8	4.7	2.8	8.1
24D3----- Shelby, severely eroded	90	4e	4.8	4.7	2.8	8.1
24E2----- Shelby, moderately eroded	85	4e	4.1	4.0	2.4	6.9
24E3----- Shelby, severely eroded	95	6e	4.1	4.0	2.4	6.9
41----- Sparta	100	4s	3.4	3.3	2.0	3.5
41B----- Sparta	100	4s	3.3	3.2	1.9	3.5
41C----- Sparta	85	4s	3.1	3.0	1.8	3.2
41D----- Sparta	75	6s	2.6	2.5	1.6	2.6
43----- Bremer, rarely flooded	100	2w	4.2	5.7	3.4	7.0
51----- Vesser, occasionally flooded	95	2w	5.2	5.3	3.2	6.5
54----- Zook, occasionally flooded	100	2w	3.8	5.2	3.1	6.8

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass- alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
54+----- Zook, occasionally flooded, overwash	100	2w	3.9	5.2	3.2	7.0
63C----- Chelsea	90	4s	2.4	2.3	1.4	5.0
63E----- Chelsea	95	7s	2.3	2.2	1.3	3.8
63G----- Chelsea	95	7s	1.6	1.6	1.0	3.8
65D2----- Lindley, moderately eroded	85	4e	4.2	4.0	2.4	6.7
65D3----- Lindley, severely eroded	85	6e	3.7	3.6	2.2	6.2
65E2----- Lindley, moderately eroded	85	6e	3.3	3.3	2.0	5.6
65E3----- Lindley, severely eroded	85	7e	---	3.1	1.8	5.1
65F----- Lindley	100	7e	---	3.0	1.8	4.8
65F2----- Lindley, moderately eroded	80	7e	---	2.9	1.7	4.5
65F3----- Lindley, severely eroded	90	7e	---	2.8	1.5	4.0
65G----- Lindley	100	7e	---	2.8	1.7	3.0
75----- Givin	95	1	5.9	6.1	3.6	9.9
76B----- Ladoga	95	2e	6.2	6.1	3.6	10.4
76C----- Ladoga	85	3e	6.0	5.9	3.5	10.0
76C2----- Ladoga, moderately eroded	95	3e	5.8	5.7	3.4	9.8
76D----- Ladoga	90	3e	5.7	5.6	3.3	9.4
76D2----- Ladoga, moderately eroded	90	3e	5.5	5.3	3.2	9.1

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass- alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
76D3----- Ladoga, severely eroded	85	4e	5.5	5.4	3.2	9.1
76E2----- Ladoga, moderately eroded	70	4e	4.6	4.5	2.7	7.9
76E3----- Ladoga, severely eroded	85	6e	4.6	4.5	2.7	7.9
80B----- Clinton	100	2e	5.8	5.7	3.4	9.8
80C----- Clinton	95	3e	5.6	5.5	3.3	9.4
80C2----- Clinton, moderately eroded	85	3e	5.5	5.3	3.2	9.1
80D----- Clinton	90	3e	5.3	5.1	3.1	8.8
80D2----- Clinton, moderately eroded	85	3e	5.1	5.0	3.0	8.5
80D3----- Clinton, severely eroded	75	4e	4.7	4.6	2.8	7.9
80E2----- Clinton, moderately eroded	90	4e	4.5	4.4	2.7	7.3
80E3----- Clinton, severely eroded	70	6e	4.5	4.4	2.7	7.3
80F2----- Clinton, moderately eroded	90	6e	4.5	4.4	2.7	7.3
83B----- Kenyon	75	2e	6.6	6.4	3.8	10.9
83C----- Kenyon	80	3e	6.3	6.2	3.7	10.6
83C2----- Kenyon, moderately eroded	85	3e	6.2	6.0	3.6	10.3
83D2----- Kenyon, moderately eroded	80	3e	5.8	5.7	3.4	9.7
88----- Nevin, rarely flooded	90	1	6.5	6.7	4.0	10.9

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
93D2----- Shelby, moderately eroded----- Adair, moderately eroded	50 35	3e 4e	4.6	4.7	2.8	8.1
93D3----- Shelby, severely eroded Adair, severely eroded--	50 30	4e 6e	3.0	3.1	1.8	7.4
93E2----- Shelby, moderately eroded----- Adair, moderately eroded	60 35	4e 6e	3.1	3.2	1.9	6.9
119----- Muscatine	95	1	6.8	7.0	4.2	11.4
120B----- Tama	95	2e	7.0	6.8	4.1	11.7
120C----- Tama	85	3e	6.7	6.6	3.9	11.4
120C2----- Tama, moderately eroded	75	3e	6.6	6.5	3.9	11.1
120D2----- Tama, moderately eroded	85	3e	6.1	6.0	3.6	10.5
120D3----- Tama, severely eroded	80	4e	5.9	5.8	3.5	9.9
120E2----- Tama, moderately eroded	80	4e	5.5	5.4	3.2	9.3
122----- Sperry	95	3w	3.7	5.1	3.1	6.2
133----- Colo, occasionally flooded	90	2w	4.1	5.6	3.3	6.8
133+----- Colo, occasionally flooded, overwash	90	2w	4.2	5.7	3.4	7.0
162B----- Downs	95	2e	6.4	6.3	3.8	11.1
162C----- Downs	85	3e	6.4	6.3	3.8	10.7
162C2----- Downs, moderately eroded	85	3e	6.0	5.9	3.5	10.5
162D2----- Downs, moderately eroded	85	3e	5.7	5.5	3.3	9.8

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
162D3----- Downs, severely eroded	80	4e	5.5	5.4	3.2	9.3
162E2----- Downs, moderately eroded	75	4e	5.0	4.9	2.9	8.6
162E3----- Downs, severely eroded	75	6e	4.8	4.7	2.8	8.1
163B----- Fayette	95	2e	6.3	6.1	3.7	10.5
163C----- Fayette	90	3e	6.0	5.9	3.5	10.1
163C2----- Fayette, moderately eroded	85	3e	5.9	5.7	3.4	9.8
163D----- Fayette	85	3e	5.7	5.5	3.3	9.5
163D2----- Fayette, moderately eroded	65	3e	5.5	5.4	3.2	9.2
163D3----- Fayette, severely eroded	60	4e	5.2	5.0	3.0	8.6
163E----- Fayette	75	4e	5.0	4.8	2.9	8.3
163E2----- Fayette, moderately eroded	70	4e	4.8	4.7	2.8	8.0
163E3----- Fayette, severely eroded	70	6e	4.5	4.3	2.6	7.4
163F----- Fayette	75	6e	4.5	4.7	2.8	7.6
163F2----- Fayette, moderately eroded	70	6e	4.4	4.3	2.6	7.3
163F3----- Fayette, severely eroded	70	6e	4.0	3.9	2.4	6.7
163G----- Fayette	85	7e	---	4.2	2.5	7.2
165----- Stronghurst	95	1	5.4	5.3	3.3	9.3
171C2----- Bassett, moderately eroded	85	3e	5.8	5.7	3.4	9.4

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass- alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
171D2----- Bassett, moderately eroded	80	3e	5.4	5.3	3.2	8.9
171D3----- Bassett, severely eroded	75	3e	5.4	5.3	3.2	8.9
171E2----- Bassett, moderately eroded	80	4e	4.7	4.6	2.8	7.7
171E3----- Bassett, severely eroded	75	6e	4.7	4.6	2.8	7.7
172----- Wabash, occasionally flooded	100	3w	2.6	2.5	2.1	6.0
175----- Dickinson	100	3s	4.8	4.7	2.8	7.9
175B----- Dickinson	95	3e	4.7	4.6	2.7	7.7
175C----- Dickinson	85	3e	4.5	4.3	2.6	7.3
178----- Waukee	90	2s	5.7	5.5	3.3	9.3
178B----- Waukee	100	2e	5.4	5.3	3.2	9.0
178C----- Waukee	100	3e	5.4	5.3	3.2	9.0
179D2----- Gara, moderately eroded	80	4e	4.5	4.3	2.6	7.4
179D3----- Gara, severely eroded	70	6e	4.1	4.0	2.4	6.9
179E2----- Gara, moderately eroded	85	6e	3.7	3.6	2.2	2.2
179E3----- Gara, severely eroded	75	6e	3.4	3.3	2.0	5.7
179F2----- Gara, moderately eroded	85	7e	---	3.0	1.8	5.4
179F3----- Gara, severely eroded	90	7e	---	2.7	1.6	5.3
180----- Keomah	95	2w	5.2	5.4	3.2	8.8
192D2----- Adair, moderately eroded	75	4e	2.1	2.2	1.3	4.6

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
192D3----- Adair, severely eroded	70	6e	1.3	1.4	0.8	3.6
220----- Nodaway, occasionally flooded	85	2w	6.4	6.3	3.8	10.7
279----- Taintor	90	2w	4.7	6.4	3.8	7.8
280----- Mahaska	95	1	6.6	6.8	4.1	11.0
281B----- Otley	100	2e	6.6	6.4	3.9	11.0
281C----- Otley	90	3e	6.4	6.2	3.7	10.7
281C2----- Otley, moderately eroded	85	3e	6.2	6.1	3.6	10.4
281D2----- Otley, moderately eroded	80	3e	5.8	5.7	3.4	9.8
281D3----- Otley, severely eroded	80	4e	5.5	5.4	3.2	9.2
281E2----- Otley, moderately eroded	85	4e	5.8	5.7	3.4	9.8
291----- Atterberry	90	1	5.8	5.7	3.6	9.3
293C----- Fayette----- Chelsea----- Tell-----	45 35 20	3e 4s 3e	2.7	3.6	2.1	4.4
293D----- Fayette----- Chelsea----- Tell-----	45 35 20	3e 6s 3e	1.6	3.2	1.9	3.8
293D2----- Fayette, moderately eroded----- Chelsea, moderately eroded----- Tell, moderately eroded	45 35 20	3e 6s 4e	3.7	3.6	2.1	3.6
293E----- Fayette----- Chelsea----- Tell-----	40 35 25	4e 7s 4e	2.7	2.7	1.6	3.4

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
293E2----- Fayette, moderately eroded----- Chelsea, moderately eroded----- Tell, moderately eroded	40 35 25	4e 7s 4e	3.0	2.9	1.7	2.6
293G----- Fayette----- Chelsea----- Tell-----	40 35 25	7e 7s 6e	---	---	1.8	5.5
353B----- Tell	85	2e	5.3	5.2	3.1	3.5
353C----- Tell	90	3e	5.1	5.0	3.0	3.4
353C2----- Tell, moderately eroded	90	3e	4.8	4.6	2.8	3.3
353D2----- Tell, moderately eroded	90	4e	4.5	4.4	2.6	3.1
377B----- Dinsdale	100	2e	6.7	6.6	3.9	11.2
377C----- Dinsdale	85	3e	6.5	6.4	3.8	10.9
420----- Tama, terrace	100	1	7.1	7.0	4.2	11.9
420B----- Tama, terrace	100	2e	7.0	6.8	4.1	11.7
422----- Amana, occasionally flooded	90	2w	5.8	5.9	3.6	9.7
424D2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	50 35	4e 4e	3.6	3.8	2.1	5.3
424E2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	45 40	6e 6e	2.1	2.3	1.3	4.2
424E3----- Lindley, severely eroded Keswick, severely eroded	45 40	7e 7e	---	2.3	1.3	2.6
424F2----- Lindley, moderately eroded----- Keswick, moderately eroded-----	65 25	7e 7e	---	2.1	1.3	2.2

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
425D2----- Keswick, moderately eroded	90	4e	2.3	2.3	1.4	3.9
425D3----- Keswick, severely eroded	60	6e	1.5	1.4	0.9	2.5
428B----- Ely	95	2e	6.4	6.5	3.9	10.6
430----- Ackmore, occasionally flooded	100	2w	4.2	4.1	3.5	7.1
450----- Pillot	100	2e	6.6	6.5	3.9	7.1
450B----- Pillot	90	2e	6.4	6.3	3.7	7.1
450C----- Pillot	85	3e	6.2	6.1	3.6	6.5
453----- Tuskeego, rarely flooded	75	3w	3.2	4.3	2.6	5.3
462B----- Downs, terrace	90	2e	6.4	6.3	3.8	11.1
463B----- Fayette, terrace	100	2e	6.3	6.1	3.7	10.5
463C2----- Fayette, moderately eroded, terrace	90	3e	5.9	5.7	3.4	9.8
463D2----- Fayette, moderately eroded, terrace	90	3e	5.5	5.4	3.2	9.2
463D3----- Fayette, severely eroded, terrace	80	4e	5.5	5.4	3.2	9.2
463E2----- Fayette, moderately eroded, terrace	90	4e	4.8	4.7	2.8	8.0
463E3----- Fayette, severely eroded, terrace	90	6e	4.8	4.7	2.8	8.0
463F2----- Fayette, moderately eroded, terrace	85	6e	4.4	4.3	2.6	7.3
463F3----- Fayette, severely eroded, terrace	90	6e	4.4	4.3	2.6	7.3

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
484----- Lawson, occasionally flooded	80	2w	6.3	6.2	3.9	4.0
587----- Chequest, occasionally flooded	95	2w	3.6	4.9	3.0	6.0
587+----- Chequest, occasionally flooded, overwash	95	2w	3.6	5.1	3.1	6.0
626----- Hayfield	90	2s	4.8	4.9	2.9	8.0
663D2----- Seaton, moderately eroded	85	3e	5.5	5.4	3.2	7.1
663E2----- Seaton, moderately eroded	85	4e	4.8	4.7	2.8	6.9
663E3----- Seaton, severely eroded	80	6e	4.5	4.4	2.4	6.1
663F2----- Seaton, moderately eroded	80	6e	4.3	4.2	2.0	5.7
687----- Watkins, rarely flooded	90	1	6.3	6.2	3.7	10.6
687B----- Watkins, rarely flooded	100	2e	6.3	6.2	3.7	10.6
688----- Koszta, rarely flooded	95	1	6.2	6.3	3.8	10.3
771B----- Waubee	90	2e	6.5	6.4	3.8	10.9
771C2----- Waubee, moderately eroded	90	3e	6.0	5.8	3.5	10.0
792D2----- Armstrong, moderately eroded	75	4e	2.6	2.5	1.5	1.9
876B----- Ladoga, terrace	90	2e	6.2	6.1	3.6	10.4
876C----- Ladoga, terrace	80	3e	6.0	5.9	3.5	10.0
876C2----- Ladoga, moderately eroded, terrace	85	3e	5.8	5.7	3.4	9.8

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass- alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
876D2----- Ladoga, moderately eroded, terrace	90	3e	5.5	5.3	3.2	9.1
881B----- Otley, terrace	95	2e	6.6	6.4	3.9	11.0
911B----- Colo----- Ely-----	55 35	2w 2e	4.1	5.6	3.3	7.0
993D2----- Gara, moderately eroded Armstrong, moderately eroded-----	45 35	4e 4e	4.5	4.4	2.6	7.4
993E2----- Gara, moderately eroded Armstrong, moderately eroded-----	45 40	6e 6e	3.8	3.7	2.2	6.2
993F2----- Gara, moderately eroded Armstrong, moderately eroded-----	65 25	7e 7e	---	3.0	1.5	5.0
1160----- Walford, terrace	95	2w	3.7	5.1	3.1	6.4
1220----- Nodaway, frequently flooded, channeled	75	5w	4.2	6.2	2.0	7.0
1291----- Atterberry, terrace	95	1	6.1	6.0	3.9	9.3
1354----- Aquents, ponded	100	7w	---	---	---	---
1442B----- Tama----- Sparta----- Pillot-----	40 35 20	2e 4s 2e	6.1	6.0	3.6	11.7
1442C----- Tama----- Sparta----- Pillot-----	40 35 20	3e 4s 3e	5.3	5.2	3.1	7.3
1442C2----- Tama, moderately eroded Sparta, moderately eroded----- Pilllot, moderately eroded-----	40 35 20	3e 4s 3e	5.8	5.7	3.4	11.1

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Brome-grass- alfalfa hay	Smooth brome-grass	Kentucky bluegrass	Brome-grass- alfalfa
			Tons	AUM*	AUM*	AUM*
1442D2----- Tama, moderately eroded	40	3e	5.4	5.3	3.2	10.5
Sparta, moderately eroded-----	35	6s				
Pillot, moderately eroded-----	20	3e				
1442E2----- Tama, moderately eroded	40	4e	3.8	3.7	2.2	8.6
Sparta, moderately eroded-----	35	6s				
Pillot, moderately eroded-----	20	4e				
1540----- Quiver, frequently flooded-----	40	5w	---	---	2.0	---
Zook, frequently flooded	30	5w				
Klum, frequently flooded	15	5w				
2219----- Ella, rarely flooded	70	1	6.0	5.9	3.5	4.0
2219B----- Ella, rarely flooded	75	2e	5.9	5.8	3.5	3.8
2219C2----- Ella, moderately eroded	80	3e	5.5	5.4	3.2	3.6
2422----- Amana, occasionally flooded-----	50	2w	5.1	5.0	2.0	---
Nodaway, occasionally flooded-----	30	2w				
Lawson, occasionally flooded-----	20	2w				
4946. Udorthents-Interstate highway						
5010. Pits, sand and gravel						
5040. Udorthents						
6220----- Nodaway, frequently flooded	85	4w	---	---	2.0	---
6422----- Amana, frequently flooded	90	4w	---	---	2.0	---
AW. Animal waste lagoon						

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass- alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
SL. Sewage lagoon						
W. Water						

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Prime Farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in the table "Prime Farmland" at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the map unit name)

Map symbol	Map unit name
5B	Ackmore-Colo complex, 2 to 5 percent slopes (where drained)
7	Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded
7B	Wiota silty clay loam, 2 to 5 percent slopes, rarely flooded
8B	Judson silty clay loam, 2 to 5 percent slopes
41	Sparta loamy fine sand, 0 to 2 percent slopes (where irrigated)
41B	Sparta loamy fine sand, 2 to 5 percent slopes (where irrigated)
43	Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded (where drained)
51	Vesser silt loam, 0 to 2 percent slopes, occasionally flooded (where drained)
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
54+	Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash (where drained and either protected from flooding or not frequently flooded during the growing season)
75	Givin silt loam, 0 to 2 percent slopes
76B	Ladoga silt loam, 2 to 5 percent slopes
80B	Clinton silt loam, 2 to 5 percent slopes
83B	Kenyon loam, 2 to 5 percent slopes
88	Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded
119	Muscatine silty clay loam, 0 to 2 percent slopes
120B	Tama silty clay loam, 2 to 5 percent slopes
122	Sperry silt loam, 0 to 1 percent slopes, depressionnal (where drained)
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash (where drained and either protected from flooding or not frequently flooded during the growing season)
162B	Downs silt loam, 2 to 5 percent slopes
163B	Fayette silt loam, 2 to 5 percent slopes
165	Stronghurst silt loam, 0 to 2 percent slopes
175	Dickinson fine sandy loam, 0 to 2 percent slopes
175B	Dickinson fine sandy loam, 2 to 5 percent slopes
178	Waukee loam, 0 to 2 percent slopes
178B	Waukee loam, 2 to 5 percent slopes
180	Keomah silt loam, 0 to 2 percent slopes
220	Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
279	Taintor silty clay loam, 0 to 2 percent slopes (where drained)
280	Mahaska silty clay loam, 0 to 2 percent slopes
281B	Otley silty clay loam, 2 to 5 percent slopes
291	Atterberry silt loam, 0 to 2 percent slopes
353B	Tell silt loam, 2 to 5 percent slopes
377B	Dinsdale silty clay loam, 2 to 5 percent slopes
420	Tama silty clay loam, terrace, 0 to 2 percent slopes
420B	Tama silty clay loam, terrace, 2 to 5 percent slopes
422	Amana silt loam, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
428B	Ely silty clay loam, 2 to 5 percent slopes
430	Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
450	Pillot silt loam, 0 to 2 percent slopes
450B	Pillot silt loam, 2 to 5 percent slopes
453	Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded (where drained)
462B	Downs silt loam, terrace, 2 to 5 percent slopes
463B	Fayette silt loam, terrace, 2 to 5 percent slopes
484	Lawson silt loam, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
587	Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
587+	Chequest silt loam, 0 to 2 percent slopes, occasionally flooded, overwash (where drained and either protected from flooding or not frequently flooded during the growing season)

Prime Farmland--Continued

Map symbol	Map unit name
626	Hayfield silt loam, 0 to 2 percent slopes
687	Watkins silt loam, 0 to 2 percent slopes, rarely flooded
687B	Watkins silt loam, 2 to 5 percent slopes, rarely flooded
688	Koszta silt loam, 0 to 2 percent slopes, rarely flooded
771B	Waubee silt loam, 2 to 5 percent slopes
876B	Ladoga silt loam, terrace, 2 to 5 percent slopes
881B	Otley silty clay loam, terrace, 2 to 5 percent slopes
911B	Colo-Ely complex, 2 to 5 percent slopes (where drained)
1160	Walford silt loam, terrace, 0 to 2 percent slopes (where drained)
1291	Atterberry silt loam, terrace, 0 to 2 percent slopes
1442B	Tama-Sparta-Pillot complex, 2 to 5 percent slopes
2219	Ella silt loam, 0 to 2 percent slopes, rarely flooded
2219B	Ella silt loam, 2 to 5 percent slopes, rarely flooded
2422	Amana-Nodaway-Lawson complex, 0 to 2 percent slopes, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)

Agricultural Waste Management

The table “Agricultural Waste Management” is described in this section.

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

This table shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a

cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erosion factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erosion factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

A soil feature considered in the ratings for application of manure, sewage sludge, and wastewater is depth to the top of a water table (saturated zone). During August, September, and October, this depth is generally more than 60 cm in normal years. For soils that are limited by wetness, "Nov-Jul" indicates the most problematic months of the year for application of manure, sewage sludge, and wastewater. These soils may be slow to drain and can become waterlogged and boggy during periods of heavy precipitation.

Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 0.08
Colo-----	35	Very limited Depth to saturated zone (Nov-Jul) Leaching	1.00 0.70	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 0.08
7: Wiota, rarely flooded-----	100	Not limited		Somewhat limited Flooding	0.40	Not limited	
7B: Wiota, rarely flooded-----	100	Not limited		Somewhat limited Flooding	0.40	Somewhat limited Too steep for surface application	0.08
8B: Judson-----	95	Not limited		Not limited		Somewhat limited Too steep for surface application	0.08
24C2: Shelby, moderately eroded-----	85	Somewhat limited Slow water movement Too acid	0.41 0.02	Somewhat limited Slow water movement Too acid	0.31 0.07	Somewhat limited Too steep for surface application Slow water movement Too acid	0.92 0.31 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24D2: Shelby, moderately eroded-----	70	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Too steep for	1.00
		Slow water	0.41	Slow water	0.31	surface	
		movement		movement		application	
		Too acid	0.02	Too acid	0.07	Too steep for	0.78
						sprinkler	
						application	
						Slow water	0.31
						movement	
24D3: Shelby, severely eroded-----	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Too steep for	1.00
		Slow water	0.41	Slow water	0.31	surface	
		movement		movement		application	
		Too acid	0.02	Too acid	0.07	Too steep for	0.78
						sprinkler	
						application	
						Slow water	0.31
						movement	
24E2: Shelby, moderately eroded-----	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for	1.00
		Slow water	0.41	Slow water	0.31	surface	
		movement		movement		application	
		Too acid	0.02	Too acid	0.07	Too steep for	1.00
						sprinkler	
						application	
						Slow water	0.31
						movement	
24E3: Shelby, severely eroded-----	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for	1.00
		Slow water	0.41	Slow water	0.31	surface	
		movement		movement		application	
		Too acid	0.02	Too acid	0.07	Too steep for	1.00
						sprinkler	
						application	
						Slow water	0.31
						movement	
41: Sparta-----	100	Very limited		Very limited		Very limited	
		Filtering	1.00	Filtering	1.00	Filtering	1.00
		capacity		capacity		capacity	
		Leaching	0.45	Too acid	0.07	Too acid	0.07
		Too acid	0.02				

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41B: Sparta-----	100	Very limited Filtering capacity Leaching Too acid	1.00 0.45 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.08 0.07
41C: Sparta-----	85	Very limited Filtering capacity Leaching Too acid	1.00 0.45 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07
41D: Sparta-----	75	Very limited Filtering capacity Slope Leaching	1.00 0.63 0.45	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.07	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 0.78
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.30	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 0.40 0.22	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.22
51: Vesser, occasionally flooded-----	95	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
54: Zook, occasionally flooded-----	100	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	1.00 1.00 0.60

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
54+: Zook, occasionally flooded, overwash--	100	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	1.00 1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	1.00 1.00 0.60
63C: Chelsea-----	90	Very limited Filtering capacity Leaching Droughty	1.00 0.45 0.13	Very limited Filtering capacity Droughty	1.00 0.13	Very limited Filtering capacity Too steep for surface application Droughty	1.00 0.92 0.13
63E: Chelsea-----	95	Very limited Filtering capacity Slope Leaching	1.00 1.00 0.45	Very limited Filtering capacity Slope Droughty	1.00 1.00 0.13	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00
63G: Chelsea-----	95	Very limited Slope Filtering capacity Leaching	1.00 1.00 0.45	Very limited Filtering capacity Slope Droughty	1.00 1.00 0.13	Very limited Filtering capacity Too steep for sprinkler application Too steep for surface application	1.00 1.00 1.00
65D2: Lindley, moderately eroded-----	85	Somewhat limited Slope Slow water movement Too acid	0.63 0.41 0.08	Somewhat limited Slope Too acid Slow water movement	0.63 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.31

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65D3: Lindley, severely eroded-----	85	Somewhat limited Slope Slow water movement Too acid	0.63 0.41 0.08	Somewhat limited Slope Too acid Slow water movement	0.63 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.31
65E2: Lindley, moderately eroded-----	85	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.31
65E3: Lindley, severely eroded-----	85	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.31
65F: Lindley-----	100	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.31
65F2: Lindley, moderately eroded-----	80	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65F3: Lindley, severely eroded-----	90	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.31
65G: Lindley-----	100	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.31
75: Givin-----	95	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.41	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.31	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.31
76B: Ladoga-----	95	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Slow water movement Too steep for surface application	0.31 0.08
76C: Ladoga-----	85	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Too steep for surface application Slow water movement Too steep for sprinkler application	0.92 0.31 0.02
76C2: Ladoga, moderately eroded-----	95	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Too steep for surface application Slow water movement Too steep for sprinkler application	0.92 0.31 0.02

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76D: Ladoga-----	90	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
76D2: Ladoga, moderately eroded-----	90	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
76D3: Ladoga, severely eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
76E2: Ladoga, moderately eroded-----	70	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
76E3: Ladoga, severely eroded-----	85	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80B: Clinton-----	100	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
		Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
						Too acid	0.07
80C: Clinton-----	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	0.92
		Too acid	0.02	Too acid	0.07	Slow water movement	0.31
						Too acid	0.07
80C2: Clinton, moderately eroded-----	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	0.92
		Too acid	0.02	Too acid	0.07	Slow water movement	0.31
						Too acid	0.07
80D: Clinton-----	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Too steep for surface application	1.00
		Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	0.78
		Too acid	0.02	Too acid	0.07	Slow water movement	0.31
80D2: Clinton, moderately eroded-----	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.63	Slope	0.63	Too steep for surface application	1.00
		Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	0.78
		Too acid	0.02	Too acid	0.07	Slow water movement	0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80D3: Clinton, severely eroded-----	75	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
80E2: Clinton, moderately eroded-----	90	Very limited Slope Slow water movement Too acid	1.00 0.41 0.02	Very limited Slope Slow water movement Too acid	1.00 0.31 0.07	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
80E3: Clinton, severely eroded-----	70	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
80F2: Clinton, moderately eroded-----	90	Very limited Slope Slow water movement Too acid	1.00 0.41 0.02	Very limited Slope Slow water movement Too acid	1.00 0.31 0.07	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	1.00 1.00 0.31
83B: Kenyon-----	75	Not limited		Not limited		Somewhat limited Too steep for surface application	0.08

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
83C: Kenyon-----	80	Not limited		Not limited		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
83C2: Kenyon, moderately eroded-----	85	Not limited		Not limited		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
83D2: Kenyon, moderately eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Too steep for surface application Too steep for sprinkler application	1.00 0.78
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.40	Very limited Depth to saturated zone (Nov-Jul)	1.00
93D2: Shelby, moderately eroded-----	50	Somewhat limited Slope Slow water movement Too acid	0.63 0.41 0.02	Somewhat limited Slope Slow water movement Too acid	0.63 0.31 0.07	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
Adair, moderately eroded-----	35	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
93D3: Shelby, severely eroded-----	50	Somewhat limited Slope Slow water movement Too acid	0.63 0.41 0.02	Somewhat limited Slope Slow water movement Too acid	0.63 0.31 0.07	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
Adair, severely eroded-----	30	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
93E2: Shelby, moderately eroded-----	60	Very limited Slope Slow water movement Too acid	1.00 0.41 0.02	Very limited Slope Slow water movement Too acid	1.00 0.31 0.07	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
Adair, moderately eroded-----	35	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00
119: Muscatine-----	95	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120B: Tama-----	95	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
120C: Tama-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
120C2: Tama, moderately eroded-----	75	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
120D2: Tama, moderately eroded-----	85	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
120D3: Tama, severely eroded-----	80	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120E2: Tama, moderately eroded-----	80	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
122: Sperry-----	95	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Ponding	1.00 1.00 1.00
133: Colo, occasionally flooded-----	90	Very limited Depth to saturated zone (Nov-Jul) Leaching Flooding	1.00 0.70 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
133+: Colo, occasionally flooded, overwash--	90	Very limited Depth to saturated zone (Nov-Jul) Leaching Flooding	1.00 0.70 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
162B: Downs-----	95	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
162C: Downs-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162C2: Downs, moderately eroded-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
162D2: Downs, moderately eroded-----	85	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
162D3: Downs, severely eroded-----	80	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
162E2: Downs, moderately eroded-----	75	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
162E3: Downs, severely eroded-----	75	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163B: Fayette-----	95	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
163C: Fayette-----	90	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
163C2: Fayette, moderately eroded-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
163D: Fayette-----	85	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
163D2: Fayette, moderately eroded-----	65	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
163D3: Fayette, severely eroded-----	60	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163E: Fayette-----	75	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
163E2: Fayette, moderately eroded-----	70	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
163E3: Fayette, severely eroded-----	70	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
163F: Fayette-----	75	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
163F2: Fayette, moderately eroded-----	70	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163F3: Fayette, severely eroded-----	70	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
163G: Fayette-----	85	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
165: Stronghurst-----	95	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07
171C2: Basset, moderately eroded-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
171D2: Basset, moderately eroded-----	80	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171D3: Bassett, severely eroded-----	75	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
171E2: Bassett, moderately eroded-----	80	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
171E3: Bassett, severely eroded-----	75	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
172: Wabash, occasionally flooded-----	100	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00 0.60	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00 1.00	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00 0.60
175: Dickinson-----	100	Very limited Filtering capacity Leaching Droughty	1.00 0.45 0.01	Very limited Filtering capacity Droughty	1.00 0.01	Very limited Filtering capacity Droughty	1.00 0.01
175B: Dickinson-----	95	Very limited Filtering capacity Leaching Droughty	1.00 0.45 0.01	Very limited Filtering capacity Droughty	1.00 0.01	Very limited Filtering capacity Too steep for surface application Droughty	1.00 0.08 0.01

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
175C: Dickinson-----	85	Very limited Filtering capacity Leaching Droughty	1.00 0.45 0.01	Very limited Filtering capacity Droughty	1.00 0.01	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 0.92 0.02
178: Waukee-----	90	Very limited Filtering capacity Too acid	1.00 0.03	Very limited Filtering capacity Too acid	1.00 0.14	Very limited Filtering capacity Too acid	1.00 0.14
178B: Waukee-----	100	Very limited Filtering capacity Too acid	1.00 0.03	Very limited Filtering capacity Too acid	1.00 0.14	Very limited Filtering capacity Too acid Too steep for surface application	1.00 0.14 0.08
178C: Waukee-----	100	Very limited Filtering capacity Too acid	1.00 0.03	Very limited Filtering capacity Too acid	1.00 0.14	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.14
179D2: Gara, moderately eroded-----	80	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
179D3: Gara, severely eroded-----	70	Very limited Dense layer Slope Slow water movement	1.00 0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179E2: Gara, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
179E3: Gara, severely eroded-----	75	Very limited Slope Dense layer Slow water movement	1.00 1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
179F2: Gara, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	1.00 1.00 0.31
179F3: Gara, severely eroded-----	90	Very limited Slope Dense layer Slow water movement	1.00 1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	1.00 1.00 0.31
180: Keomah-----	95	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Too acid	1.00 0.74 0.08	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Too acid	1.00 0.60 0.31	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Too acid	1.00 0.60 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
220: Nodaway, occasionally flooded-----	85	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60
279: Taintor-----	90	Very limited Depth to saturated zone (Nov-Jul) Leaching Slow water movement	1.00 0.50 0.41	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.31	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.31
280: Mahaska-----	95	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07
281B: Otley-----	100	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too acid	1.00 0.08 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281C: Otley-----	90	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too acid	1.00 0.92 0.07
281C2: Otley, moderately eroded-----	85	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too acid	1.00 0.92 0.07
281D2: Otley, moderately eroded-----	80	Very limited Depth to saturated zone (Nov-Jul) Slope Too acid	1.00 0.63 0.02	Very limited Depth to saturated zone (Nov-Jul) Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Depth to saturated zone (Nov-Jul) Too steep for sprinkler application	1.00 1.00 0.78
281D3: Otley, severely eroded-----	80	Very limited Depth to saturated zone (Nov-Jul) Slope Too acid	1.00 0.63 0.02	Very limited Depth to saturated zone (Nov-Jul) Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Depth to saturated zone (Nov-Jul) Too steep for sprinkler application	1.00 1.00 0.78
281E2: Otley, moderately eroded-----	85	Very limited Slope Depth to saturated zone (Nov-Jul) Too acid	1.00 1.00 0.02	Very limited Slope Depth to saturated zone (Nov-Jul) Too acid	1.00 1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Depth to saturated zone (Nov-Jul)	1.00 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
291: Atterberry-----	90	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00
293C: Fayette-----	45	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
Chelsea-----	35	Very limited Filtering capacity Leaching Droughty	1.00 0.45 0.13	Very limited Filtering capacity Droughty	1.00 0.13	Very limited Filtering capacity Too steep for surface application Droughty	1.00 0.92 0.13
Tell-----	20	Very limited Filtering capacity Too acid	1.00 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07
293D: Fayette-----	45	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
Chelsea-----	35	Very limited Filtering capacity Slope Leaching	1.00 0.63 0.45	Very limited Filtering capacity Slope Droughty	1.00 0.63 0.13	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 0.78

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D: Tell-----	20	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.02	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Filtering capacity Too steep for sprinkler application	1.00 1.00 0.78
293D2: Fayette, moderately eroded-----	45	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
Chelsea, moderately eroded-----	35	Very limited Filtering capacity Slope Leaching	1.00 0.63 0.45	Very limited Filtering capacity Slope Droughty	1.00 0.63 0.13	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 0.78
Tell, moderately eroded-----	20	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.02	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Filtering capacity Too steep for sprinkler application	1.00 1.00 0.78
293E: Fayette-----	40	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293E: Chelsea-----	35	Very limited Filtering capacity Slope Leaching	1.00 1.00 0.45	Very limited Filtering capacity Slope Droughty	1.00 1.00 0.13	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00 1.00
Tell-----	25	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.02	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Filtering capacity	1.00 1.00 1.00 1.00
293E2: Fayette, moderately eroded-----	40	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 1.00 0.07
Chelsea, moderately eroded-----	35	Very limited Filtering capacity Slope Leaching	1.00 1.00 0.45	Very limited Filtering capacity Slope Droughty	1.00 1.00 0.13	Very limited Filtering capacity Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00
Tell, moderately eroded-----	25	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.02	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Filtering capacity	1.00 1.00 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293G: Fayette-----	40	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
Chelsea-----	35	Very limited Slope Filtering capacity Leaching	1.00 1.00 0.45	Very limited Filtering capacity Slope Droughty	1.00 1.00 0.13	Very limited Filtering capacity Too steep for sprinkler application Too steep for surface application	1.00 1.00 1.00 1.00
Tell-----	25	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.02	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Filtering capacity	1.00 1.00 1.00 1.00
353B: Tell-----	85	Very limited Filtering capacity Too acid	1.00 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.08 0.07
353C: Tell-----	90	Very limited Filtering capacity Too acid	1.00 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07
353C2: Tell, moderately eroded-----	90	Very limited Filtering capacity Too acid	1.00 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
353D2: Tell, moderately eroded-----	90	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.02	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Filtering capacity Too steep for sprinkler application	1.00 1.00 0.78
377B: Dinsdale-----	100	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
377C: Dinsdale-----	85	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
420: Tama, terrace-----	100	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too acid	0.07
420B: Tama, terrace-----	100	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
422: Amana, occasionally flooded-----	90	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
424D2: Lindley, moderately eroded-----	50	Somewhat limited Slope Slow water movement Too acid	0.63 0.41 0.08	Somewhat limited Slope Too acid Slow water movement	0.63 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424D2: Keswick, moderately eroded-----	35	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
424E2: Lindley, moderately eroded-----	45	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.31
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00
424E3: Lindley, severely eroded-----	45	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.31
Keswick, severely eroded-----	40	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424F2: Lindley, moderately eroded-----	65	Very limited Slope Slow water movement Too acid	1.00 0.41 0.08	Very limited Slope Too acid Slow water movement	1.00 0.31 0.31	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.31
Keswick, moderately eroded-----	25	Very limited Slope Depth to saturated zone (Nov-Jul) Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slope Slow water movement	1.00 1.00 1.00	Very limited Too steep for sprinkler application Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 1.00 1.00
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
428B: Ely-----	95	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 0.08

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
430: Ackmore, occasionally flooded-----	100	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
450: Pillot-----	100	Not limited		Not limited		Not limited	
450B: Pillot-----	90	Not limited		Not limited		Somewhat limited Too steep for surface application	0.08
450C: Pillot-----	85	Not limited		Not limited		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
453: Tuskeego, rarely flooded-----	75	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Leaching	1.00 1.00 0.50	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00 0.40	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Too acid	1.00 1.00 0.07
462B: Downs, terrace-----	90	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
463B: Fayette, terrace----	100	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste	Application of sewage sludge		Disposal of wastewater by irrigation		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463C2: Fayette, moderately eroded, terrace----	90	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
463D2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
463D3: Fayette, severely eroded, terrace----	80	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for sprinkler application Too steep for surface application Too acid	1.00 1.00 0.07
484: Lawson, occasionally flooded-----	80	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
587: Chequest, occasionally flooded-----	95	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 0.60 0.41	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 0.31	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 0.60 0.31
587+: Chequest, occasionally flooded, overwash--	95	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 0.60 0.41	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 0.31	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 0.60 0.31
626: Hayfield-----	90	Very limited Filtering capacity Depth to saturated zone (Nov-Jul)	1.00 1.00	Very limited Filtering capacity Depth to saturated zone (Nov-Jul)	1.00 1.00	Very limited Filtering capacity Depth to saturated zone (Nov-Jul)	1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste	Application of sewage sludge		Disposal of wastewater by irrigation		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
663D2: Seaton, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Too steep for surface application Too steep for sprinkler application	1.00 0.78
663E2: Seaton, moderately eroded-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Too steep for surface application Too steep for sprinkler application	1.00 1.00
663E3: Seaton, severely eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Too steep for surface application Too steep for sprinkler application	1.00 1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Too steep for sprinkler application Too steep for surface application	1.00 1.00
687: Watkins, rarely flooded-----	90	Not limited		Somewhat limited Flooding	0.40	Not limited	
687B: Watkins, rarely flooded-----	100	Not limited		Somewhat limited Flooding	0.40	Somewhat limited Too steep for surface application	0.08

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Flooding Too acid	1.00 0.40 0.07	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07
771B: Waubeek-----	90	Not limited		Not limited		Somewhat limited Too steep for surface application	0.08
771C2: Waubeek, moderately eroded-----	90	Very limited Dense layer	1.00	Not limited		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
792D2: Armstrong, moderately eroded--	75	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
876B: Ladoga, terrace-----	90	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Slow water movement	0.31
876C: Ladoga, terrace-----	80	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Too steep for surface application Slow water movement Too steep for sprinkler application	0.92 0.31 0.02

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
876C2: Ladoga, moderately eroded, terrace----	85	Somewhat limited Slow water movement	0.41	Somewhat limited Slow water movement	0.31	Somewhat limited Too steep for surface application Slow water movement Too steep for sprinkler application	0.92 0.31 0.02
876D2: Ladoga, moderately eroded, terrace----	90	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31
881B: Otley, terrace-----	95	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.02	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07	Very limited Depth to saturated zone (Nov-Jul) Too acid	1.00 0.07
911B: Colo-----	55	Very limited Depth to saturated zone (Nov-Jul) Leaching	1.00 0.70	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 0.08
Ely-----	35	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 0.08
993D2: Gara, moderately eroded-----	45	Somewhat limited Slope Slow water movement	0.63 0.41	Somewhat limited Slope Slow water movement	0.63 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.31

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993D2: Armstrong, moderately eroded--	35	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 0.63	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Slow water movement	1.00 1.00 1.00
993E2: Gara, moderately eroded-----	45	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 1.00 0.31
Armstrong, moderately eroded--	40	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Slope	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Too steep for surface application Too steep for sprinkler application	1.00 1.00 1.00
993F2: Gara, moderately eroded-----	65	Very limited Slope Slow water movement	1.00 0.41	Very limited Slope Slow water movement	1.00 0.31	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	1.00 1.00 0.31
Armstrong, moderately eroded--	25	Very limited Slope Depth to saturated zone (Nov-Jul) Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slope Slow water movement	1.00 1.00 1.00	Very limited Too steep for sprinkler application Depth to saturated zone (Nov-Jul) Too steep for surface application	1.00 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1160: Walford, terrace----	95	Very limited Depth to saturated zone (Nov-Jul) Leaching Slow water movement	1.00 0.70 0.30	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.22	Very limited Depth to saturated zone (Nov-Jul) Slow water movement	1.00 0.22
1220: Nodaway, frequently flooded, channeled	75	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
1291: Atterberry, terrace	95	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00	Very limited Depth to saturated zone (Nov-Jul)	1.00
1354: Aquests, ponded-----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid	0.08 0.07
Sparta-----	35	Very limited Filtering capacity Leaching Too acid	1.00 0.45 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.08 0.07
Pillot-----	20	Not limited		Not limited		Somewhat limited Too steep for surface application	0.08
1442C: Tama-----	40	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442C: Sparta-----	35	Very limited Filtering capacity Leaching Too acid	1.00 0.45 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07
Pillot-----	20	Not limited		Not limited		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
1442C2: Tama, moderately eroded-----	40	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
Sparta, moderately eroded-----	35	Very limited Filtering capacity Leaching Too acid	1.00 0.45 0.02	Very limited Filtering capacity Too acid	1.00 0.07	Very limited Filtering capacity Too steep for surface application Too acid	1.00 0.92 0.07
Pillot, moderately eroded-----	20	Somewhat limited Too acid	0.02	Somewhat limited Too acid	0.07	Somewhat limited Too steep for surface application Too acid Too steep for sprinkler application	0.92 0.07 0.02
1442D2: Tama, moderately eroded-----	40	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442D2: Sparta, moderately eroded-----	35	Very limited Filtering capacity Slope Leaching	1.00 0.63 0.45	Very limited Filtering capacity Slope Too acid	1.00 0.63 0.07	Very limited Too steep for surface application Filtering capacity Too steep for sprinkler application	1.00 1.00 0.78
Pillot, moderately eroded-----	20	Somewhat limited Slope Too acid	0.63 0.02	Somewhat limited Slope Too acid	0.63 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 0.78 0.07
1442E2: Tama, moderately eroded-----	40	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07
Sparta, moderately eroded-----	35	Very limited Slope Filtering capacity Leaching	1.00 1.00 0.45	Very limited Slope Filtering capacity Too acid	1.00 1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Filtering capacity	1.00 1.00 1.00
Pillot, moderately eroded-----	20	Very limited Slope Too acid	1.00 0.02	Very limited Slope Too acid	1.00 0.07	Very limited Too steep for surface application Too steep for sprinkler application Too acid	1.00 1.00 0.07

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1540: Quiver, frequently flooded-----	40	Very limited Depth to saturated zone (Nov-Jul) Flooding Leaching	1.00 1.00 0.70	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 0.31	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 0.31
Zook, frequently flooded-----	30	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	1.00 1.00 1.00
Klum, frequently flooded-----	15	Very limited Flooding Leaching Filtering capacity	1.00 0.45 0.01	Very limited Flooding Filtering capacity	1.00 0.01	Very limited Flooding Filtering capacity	1.00 0.01
2219: Ella, rarely flooded	70	Not limited		Somewhat limited Flooding	0.40	Not limited	
2219B: Ella, rarely flooded	75	Not limited		Somewhat limited Flooding	0.40	Somewhat limited Too steep for surface application	0.08
2219C2: Ella, moderately eroded-----	80	Not limited		Somewhat limited Flooding	0.40	Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92 0.02
2422: Amana, occasionally flooded-----	50	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
Nodaway, occasionally flooded-----	30	Somewhat limited Flooding	0.60	Very limited Flooding	1.00	Somewhat limited Flooding	0.60

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2422: Lawson, occasionally flooded-----	20	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 0.60
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
6422: Amana, frequently flooded-----	90	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00 1.00
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Recreational Development

The titles of the tables described in this section are:

- “Camp Areas, Picnic Areas, and Playgrounds”
- “Paths, Trails, and Golf Fairways”

In the tables described in this section, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in these tables can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the

surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Camp Areas, Picnic Areas, and Playgrounds

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.50
Colo-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.50
7: Wiota, rarely flooded-----	100	Very limited Flooding	1.00	Not limited		Not limited	
7B: Wiota, rarely flooded-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Slope	0.50
8B: Judson-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
24C2: Shelby, moderately eroded-----	85	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
24D2: Shelby, moderately eroded-----	70	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
24D3: Shelby, severely eroded-----	90	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
24E2: Shelby, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E3: Shelby, severely eroded-----	95	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
41: Sparta-----	100	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95
41B: Sparta-----	100	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy Slope	0.95 0.50
41C: Sparta-----	85	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Very limited Slope Too sandy	1.00 0.95
41D: Sparta-----	75	Somewhat limited Too sandy Slope	0.95 0.63	Somewhat limited Too sandy Slope	0.95 0.63	Very limited Slope Too sandy	1.00 0.95
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.15	Very limited Depth to saturated zone Slow water movement	1.00 0.15	Very limited Depth to saturated zone Slow water movement	1.00 0.15
51: Vesser, occasionally flooded-----	95	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
54: Zook, occasionally flooded-----	100	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slow water movement	1.00 0.96	Very limited Depth to saturated zone Slow water movement Flooding	1.00 0.96 0.60
54+: Zook, occasionally flooded, overwash--	100	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slow water movement	1.00 0.96	Very limited Depth to saturated zone Slow water movement Flooding	1.00 0.96 0.60

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
63C: Chelsea-----	90	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Very limited Slope Too sandy	1.00 0.95
63E: Chelsea-----	95	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95
63G: Chelsea-----	95	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95
65D2: Lindley, moderately eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
65D3: Lindley, severely eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
65E2: Lindley, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
65E3: Lindley, severely eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
65F: Lindley-----	100	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
65F2: Lindley, moderately eroded-----	80	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65F3: Lindley, severely eroded-----	90	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
65G: Lindley-----	100	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
75: Givin-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21
76B: Ladoga-----	95	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Somewhat limited Slope Slow water movement	0.50 0.21
76C: Ladoga-----	85	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
76C2: Ladoga, moderately eroded-----	95	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
76D: Ladoga-----	90	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
76D2: Ladoga, moderately eroded-----	90	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
76D3: Ladoga, severely eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76E2: Ladoga, moderately eroded-----	70	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
76E3: Ladoga, severely eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
80B: Clinton-----	100	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Somewhat limited Slope Slow water movement	0.50 0.21
80C: Clinton-----	95	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
80C2: Clinton, moderately eroded-----	85	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
80D: Clinton-----	90	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
80D2: Clinton, moderately eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
80D3: Clinton, severely eroded-----	75	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
80E2: Clinton, moderately eroded-----	90	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80E3: Clinton, severely eroded-----	70	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
80F2: Clinton, moderately eroded-----	90	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
83B: Kenyon-----	75	Not limited		Not limited		Somewhat limited Slope	0.50
83C: Kenyon-----	80	Not limited		Not limited		Very limited Slope	1.00
83C2: Kenyon, moderately eroded-----	85	Not limited		Not limited		Very limited Slope	1.00
83D2: Kenyon, moderately eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
93D2: Shelby, moderately eroded-----	50	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
93D3: Shelby, severely eroded-----	50	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
Adair, severely eroded-----	30	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
93E2: Shelby, moderately eroded-----	60	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
119: Muscatine-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
120B: Tama-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
120C: Tama-----	85	Not limited		Not limited		Very limited Slope	1.00
120C2: Tama, moderately eroded-----	75	Not limited		Not limited		Very limited Slope	1.00
120D2: Tama, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
120D3: Tama, severely eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120E2: Tama, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
122: Sperry-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
133: Colo, occasionally flooded-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Flooding	1.00			Flooding	0.60
133+: Colo, occasionally flooded, overwash--	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
		Flooding	1.00			Flooding	0.60
162B: Downs-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
162C: Downs-----	85	Not limited		Not limited		Very limited Slope	1.00
162C2: Downs, moderately eroded-----	85	Not limited		Not limited		Very limited Slope	1.00
162D2: Downs, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
162D3: Downs, severely eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
162E2: Downs, moderately eroded-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
162E3: Downs, severely eroded-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163B: Fayette-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
163C: Fayette-----	90	Not limited		Not limited		Very limited Slope	1.00
163C2: Fayette, moderately eroded-----	85	Not limited		Not limited		Very limited Slope	1.00
163D: Fayette-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
163D2: Fayette, moderately eroded-----	65	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
163D3: Fayette, severely eroded-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
163E: Fayette-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163E2: Fayette, moderately eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163E3: Fayette, severely eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F: Fayette-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F2: Fayette, moderately eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F3: Fayette, severely eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163G: Fayette-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
165: Stronghurst-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
171C2: Bassett, moderately eroded-----	85	Not limited		Not limited		Very limited Slope	1.00
171D2: Bassett, moderately eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
171D3: Bassett, severely eroded-----	75	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
171E2: Bassett, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
171E3: Bassett, severely eroded-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
172: Wabash, occasionally flooded-----	100	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone Slow water movement Too clayey	1.00 1.00 1.00	Very limited Depth to saturated zone Slow water movement Too clayey	1.00 1.00 1.00
175: Dickinson-----	100	Not limited		Not limited		Not limited	
175B: Dickinson-----	95	Not limited		Not limited		Somewhat limited Slope	0.50
175C: Dickinson-----	85	Not limited		Not limited		Very limited Slope	1.00
178: Waukee-----	90	Not limited		Not limited		Not limited	
178B: Waukee-----	100	Not limited		Not limited		Somewhat limited Slope	0.50

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
178C: Waukee-----	100	Not limited		Not limited		Very limited Slope	1.00
179D2: Gara, moderately eroded-----	80	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
179D3: Gara, severely eroded-----	70	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
179E2: Gara, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
179E3: Gara, severely eroded-----	75	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
179F2: Gara, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
179F3: Gara, severely eroded-----	90	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
180: Keomah-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.43	Very limited Depth to saturated zone Slow water movement	1.00 0.43	Very limited Depth to saturated zone Slow water movement	1.00 0.43

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
220: Nodaway, occasionally flooded-----	85	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
279: Taintor-----	90	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21
280: Mahaska-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
281B: Otley-----	100	Somewhat limited Depth to saturated zone	0.39	Somewhat limited Depth to saturated zone	0.19	Somewhat limited Slope Depth to saturated zone	0.50 0.39
281C: Otley-----	90	Somewhat limited Depth to saturated zone	0.39	Somewhat limited Depth to saturated zone	0.19	Very limited Slope Depth to saturated zone	1.00 0.39
281C2: Otley, moderately eroded-----	85	Somewhat limited Depth to saturated zone	0.39	Somewhat limited Depth to saturated zone	0.19	Very limited Slope Depth to saturated zone	1.00 0.39

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281D2: Otley, moderately eroded-----	80	Somewhat limited Slope Depth to saturated zone	0.63 0.39	Somewhat limited Slope Depth to saturated zone	0.63 0.19	Very limited Slope Depth to saturated zone	1.00 0.39
281D3: Otley, severely eroded-----	80	Somewhat limited Slope Depth to saturated zone	0.63 0.39	Somewhat limited Slope Depth to saturated zone	0.63 0.19	Very limited Slope Depth to saturated zone	1.00 0.39
281E2: Otley, moderately eroded-----	85	Very limited Slope Depth to saturated zone	1.00 0.39	Very limited Slope Depth to saturated zone	1.00 0.19	Very limited Slope Depth to saturated zone	1.00 0.39
291: Atterberry-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
293C: Fayette-----	45	Not limited		Not limited		Very limited Slope	1.00
Chelsea-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Very limited Slope Too sandy	1.00 0.95
Tell-----	20	Not limited		Not limited		Very limited Slope	1.00
293D: Fayette-----	45	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Chelsea-----	35	Somewhat limited Too sandy Slope	0.95 0.63	Somewhat limited Too sandy Slope	0.95 0.63	Very limited Slope Too sandy	1.00 0.95
Tell-----	20	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
293D2: Fayette, moderately eroded-----	45	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Chelsea, moderately eroded-----	35	Somewhat limited Too sandy Slope	0.95 0.63	Somewhat limited Too sandy Slope	0.95 0.63	Very limited Slope Too sandy	1.00 0.95

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D2: Tell, moderately eroded-----	20	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
293E: Fayette-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Too sandy	0.95	Too sandy	0.95	Too sandy	0.95
Tell-----	25	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
293E2: Fayette, moderately eroded-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea, moderately eroded-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Too sandy	0.95	Too sandy	0.95	Too sandy	0.95
Tell, moderately eroded-----	25	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
293G: Fayette-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
		Too sandy	0.95	Too sandy	0.95	Too sandy	0.95
Tell-----	25	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
353B: Tell-----	85	Not limited		Not limited		Somewhat limited Slope	0.50
353C: Tell-----	90	Not limited		Not limited		Very limited Slope	1.00
353C2: Tell, moderately eroded-----	90	Not limited		Not limited		Very limited Slope	1.00
353D2: Tell, moderately eroded-----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
377B: Dinsdale-----	100	Not limited		Not limited		Somewhat limited Slope	0.50
377C: Dinsdale-----	85	Not limited		Not limited		Very limited Slope	1.00
420: Tama, terrace-----	100	Not limited		Not limited		Not limited	
420B: Tama, terrace-----	100	Not limited		Not limited		Somewhat limited Slope	0.50
422: Amana, occasionally flooded-----	90	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
424D2: Lindley, moderately eroded-----	50	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
Keswick, moderately eroded-----	35	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
424E2: Lindley, moderately eroded-----	45	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
424E3: Lindley, severely eroded-----	45	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424E3: Keswick, severely eroded-----	40	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
424F2: Lindley, moderately eroded-----	65	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
Keswick, moderately eroded-----	25	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Slope Depth to saturated zone Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
428B: Ely-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.50
430: Ackmore, occasionally flooded-----	100	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
450: Pillot-----	100	Not limited		Not limited		Not limited	

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
450B: Pillot-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
450C: Pillot-----	85	Not limited		Not limited		Very limited Slope	1.00
453: Tuskeego, rarely flooded-----	75	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone Slow water movement	1.00 1.00 1.00	Very limited Depth to saturated zone Slow water movement	1.00 1.00 1.00
462B: Downs, terrace-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
463B: Fayette, terrace----	100	Not limited		Not limited		Somewhat limited Slope	0.50
463C2: Fayette, moderately eroded, terrace----	90	Not limited		Not limited		Very limited Slope	1.00
463D2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
463D3: Fayette, severely eroded, terrace----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
484: Lawson, occasionally flooded-----	80	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
587: Chequest, occasionally flooded-----	95	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Flooding Slow water movement	1.00 0.60 0.21
587+: Chequest, occasionally flooded, overwash--	95	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.21	Very limited Depth to saturated zone Slow water movement	1.00 0.21	Very limited Depth to saturated zone Flooding Slow water movement	1.00 0.60 0.21
626: Hayfield-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
663D2: Seaton, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
663E2: Seaton, moderately eroded-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663E3: Seaton, severely eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
687: Watkins, rarely flooded-----	90	Very limited Flooding	1.00	Not limited		Not limited	
687B: Watkins, rarely flooded-----	100	Very limited Flooding	1.00	Not limited		Somewhat limited Slope	0.50
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
771B: Waubeeek-----	90	Not limited		Not limited		Somewhat limited Slope	0.50
771C2: Waubeeek, moderately eroded-----	90	Not limited		Not limited		Very limited Slope	1.00
792D2: Armstrong, moderately eroded--	75	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
876B: Ladoga, terrace----	90	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement Slope	0.21 0.12
876C: Ladoga, terrace----	80	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
876C2: Ladoga, moderately eroded, terrace----	85	Somewhat limited Slow water movement	0.21	Somewhat limited Slow water movement	0.21	Very limited Slope Slow water movement	1.00 0.21
876D2: Ladoga, moderately eroded, terrace----	90	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
881B: Otley, terrace-----	95	Somewhat limited Depth to saturated zone	0.39	Somewhat limited Depth to saturated zone	0.19	Somewhat limited Depth to saturated zone Slope	0.39 0.12
911B: Colo-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.50
Ely-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.50
993D2: Gara, moderately eroded-----	45	Somewhat limited Slope Slow water movement	0.63 0.21	Somewhat limited Slope Slow water movement	0.63 0.21	Very limited Slope Slow water movement	1.00 0.21
Armstrong, moderately eroded--	35	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slow water movement Slope	1.00 0.96 0.63	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
993E2: Gara, moderately eroded-----	45	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21
Armstrong, moderately eroded--	40	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
993F2: Gara, moderately eroded-----	65	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21	Very limited Slope Slow water movement	1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993F2: Armstrong, moderately eroded---	25	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96	Very limited Slope Depth to saturated zone Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.96
1160: Walford, terrace----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.15	Very limited Depth to saturated zone Slow water movement	1.00 0.15	Very limited Depth to saturated zone Slow water movement	1.00 0.15
1220: Nodaway, frequently flooded, channeled	75	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
1291: Atterberry, terrace	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
1354: Aquests, ponded-----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Not limited		Not limited		Somewhat limited Slope	0.50
Sparta-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy Slope	0.95 0.50
Pillot-----	20	Not limited		Not limited		Somewhat limited Slope	0.50
1442C: Tama-----	40	Not limited		Not limited		Very limited Slope	1.00
Sparta-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Very limited Slope Too sandy	1.00 0.95
Pillot-----	20	Not limited		Not limited		Very limited Slope	1.00
1442C2: Tama, moderately eroded-----	40	Not limited		Not limited		Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442C2: Sparta, moderately eroded-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Very limited Slope Too sandy	1.00 0.95
Pillot, moderately eroded-----	20	Not limited		Not limited		Very limited Slope	1.00
1442D2: Tama, moderately eroded-----	40	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Sparta, moderately eroded-----	35	Somewhat limited Too sandy Slope	0.95 0.63	Somewhat limited Too sandy Slope	0.95 0.63	Very limited Slope Too sandy	1.00 0.95
Pillot, moderately eroded-----	20	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
1442E2: Tama, moderately eroded-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Sparta, moderately eroded-----	35	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95	Very limited Slope Too sandy	1.00 0.95
Pillot, moderately eroded-----	20	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
1540: Quiver, frequently flooded-----	40	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.21	Very limited Depth to saturated zone Flooding Slow water movement	1.00 0.40 0.21	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.21
Zook, frequently flooded-----	30	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.96	Very limited Depth to saturated zone Slow water movement Flooding	1.00 0.96 0.40	Very limited Depth to saturated zone Flooding Slow water movement	1.00 1.00 0.96
Klum, frequently flooded-----	15	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2219: Ella, rarely flooded	70	Very limited Flooding	1.00	Not limited		Not limited	
2219B: Ella, rarely flooded	75	Very limited Flooding	1.00	Not limited		Somewhat limited Slope	0.50
2219C2: Ella, moderately eroded-----	80	Very limited Flooding	1.00	Not limited		Very limited Slope	1.00
2422: Amana, occasionally flooded-----	50	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
Nodaway, occasionally flooded-----	30	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Lawson, occasionally flooded-----	20	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
6422: Amana, frequently flooded-----	90	Very limited Depth to saturated zone Flooding	1.00 1.00	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 1.00
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Paths, Trails, and Golf Fairways

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Colo-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
7: Wiota, rarely flooded-----	100	Not limited		Not limited		Not limited	
7B: Wiota, rarely flooded-----	100	Not limited		Not limited		Not limited	
8B: Judson-----	95	Not limited		Not limited		Not limited	
24C2: Shelby, moderately eroded-----	85	Not limited		Not limited		Not limited	
24D2: Shelby, moderately eroded-----	70	Not limited		Not limited		Somewhat limited Slope	0.63
24D3: Shelby, severely eroded-----	90	Not limited		Not limited		Somewhat limited Slope	0.63
24E2: Shelby, moderately eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
24E3: Shelby, severely eroded-----	95	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
41: Sparta-----	100	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.07
41B: Sparta-----	100	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.07

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41C: Sparta-----	85	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.07
41D: Sparta-----	75	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Slope Droughty	0.63 0.07
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
51: Vesser, occasionally flooded-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
54: Zook, occasionally flooded-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
54+: Zook, occasionally flooded, overwash--	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
63C: Chelsea-----	90	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.48
63E: Chelsea-----	95	Somewhat limited Too sandy Slope	0.95 0.02	Somewhat limited Too sandy	0.95	Very limited Slope Droughty	1.00 0.48
63G: Chelsea-----	95	Very limited Slope Too sandy	1.00 0.95	Somewhat limited Too sandy Slope	0.95 0.56	Very limited Slope Droughty	1.00 0.48
65D2: Lindley, moderately eroded-----	85	Not limited		Not limited		Somewhat limited Slope	0.63
65D3: Lindley, severely eroded-----	85	Not limited		Not limited		Somewhat limited Slope	0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65E2: Lindley, moderately eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
65E3: Lindley, severely eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
65F: Lindley-----	100	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
65F2: Lindley, moderately eroded-----	80	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
65F3: Lindley, severely eroded-----	90	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
65G: Lindley-----	100	Very limited Slope	1.00	Somewhat limited Slope	0.56	Very limited Slope	1.00
75: Givin-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
76B: Ladoga-----	95	Not limited		Not limited		Not limited	
76C: Ladoga-----	85	Not limited		Not limited		Not limited	
76C2: Ladoga, moderately eroded-----	95	Not limited		Not limited		Not limited	
76D: Ladoga-----	90	Not limited		Not limited		Somewhat limited Slope	0.63
76D2: Ladoga, moderately eroded-----	90	Not limited		Not limited		Somewhat limited Slope	0.63
76D3: Ladoga, severely eroded-----	85	Not limited		Not limited		Somewhat limited Slope	0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76E2: Ladoga, moderately eroded-----	70	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
76E3: Ladoga, severely eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
80B: Clinton-----	100	Not limited		Not limited		Not limited	
80C: Clinton-----	95	Not limited		Not limited		Not limited	
80C2: Clinton, moderately eroded-----	85	Not limited		Not limited		Not limited	
80D: Clinton-----	90	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
80D2: Clinton, moderately eroded-----	85	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
80D3: Clinton, severely eroded-----	75	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
80E2: Clinton, moderately eroded-----	90	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00
80E3: Clinton, severely eroded-----	70	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00
80F2: Clinton, moderately eroded-----	90	Very limited Water erosion Slope	1.00 0.82	Very limited Water erosion	1.00	Very limited Slope	1.00
83B: Kenyon-----	75	Not limited		Not limited		Not limited	
83C: Kenyon-----	80	Not limited		Not limited		Not limited	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
83C2: Kenyon, moderately eroded-----	85	Not limited		Not limited		Not limited	
83D2: Kenyon, moderately eroded-----	80	Not limited		Not limited		Somewhat limited Slope	0.63
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
93D2: Shelby, moderately eroded-----	50	Not limited		Not limited		Somewhat limited Slope	0.63
Adair, moderately eroded-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
93D3: Shelby, severely eroded-----	50	Not limited		Not limited		Somewhat limited Slope	0.63
Adair, severely eroded-----	30	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
93E2: Shelby, moderately eroded-----	60	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slope	1.00 0.02	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 1.00
119: Muscatine-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
120B: Tama-----	95	Not limited		Not limited		Not limited	
120C: Tama-----	85	Not limited		Not limited		Not limited	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120C2: Tama, moderately eroded-----	75	Not limited		Not limited		Not limited	
120D2: Tama, moderately eroded-----	85	Not limited		Not limited		Somewhat limited Slope	0.63
120D3: Tama, severely eroded-----	80	Not limited		Not limited		Somewhat limited Slope	0.63
120E2: Tama, moderately eroded-----	80	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
122: Sperry-----	95	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding	1.00 1.00
133: Colo, occasionally flooded-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
133+: Colo, occasionally flooded, overwash--	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
162B: Downs-----	95	Not limited		Not limited		Not limited	
162C: Downs-----	85	Not limited		Not limited		Not limited	
162C2: Downs, moderately eroded-----	85	Not limited		Not limited		Not limited	
162D2: Downs, moderately eroded-----	85	Not limited		Not limited		Somewhat limited Slope	0.63
162D3: Downs, severely eroded-----	80	Not limited		Not limited		Somewhat limited Slope	0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162E2: Downs, moderately eroded-----	75	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
162E3: Downs, severely eroded-----	75	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
163B: Fayette-----	95	Not limited		Not limited		Not limited	
163C: Fayette-----	90	Not limited		Not limited		Not limited	
163C2: Fayette, moderately eroded-----	85	Not limited		Not limited		Not limited	
163D: Fayette-----	85	Not limited		Not limited		Somewhat limited Slope	0.63
163D2: Fayette, moderately eroded-----	65	Not limited		Not limited		Somewhat limited Slope	0.63
163D3: Fayette, severely eroded-----	60	Not limited		Not limited		Somewhat limited Slope	0.63
163E: Fayette-----	75	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
163E2: Fayette, moderately eroded-----	70	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
163E3: Fayette, severely eroded-----	70	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
163F: Fayette-----	75	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
163F2: Fayette, moderately eroded-----	70	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163F3: Fayette, severely eroded-----	70	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
163G: Fayette-----	85	Very limited Slope	1.00	Somewhat limited Slope	0.56	Very limited Slope	1.00
165: Stronghurst-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
171C2: Bassett, moderately eroded-----	85	Not limited		Not limited		Not limited	
171D2: Bassett, moderately eroded-----	80	Not limited		Not limited		Somewhat limited Slope	0.63
171D3: Bassett, severely eroded-----	75	Not limited		Not limited		Somewhat limited Slope	0.63
171E2: Bassett, moderately eroded-----	80	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
171E3: Bassett, severely eroded-----	75	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
172: Wabash, occasionally flooded-----	100	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 1.00	Very limited Depth to saturated zone Too clayey Flooding	1.00 1.00 0.60
175: Dickinson-----	100	Not limited		Not limited		Not limited	
175B: Dickinson-----	95	Not limited		Not limited		Not limited	
175C: Dickinson-----	85	Not limited		Not limited		Not limited	
178: Waukee-----	90	Not limited		Not limited		Not limited	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
178B: Waukee-----	100	Not limited		Not limited		Not limited	
178C: Waukee-----	100	Not limited		Not limited		Not limited	
179D2: Gara, moderately eroded-----	80	Not limited		Not limited		Somewhat limited Slope	0.63
179D3: Gara, severely eroded-----	70	Not limited		Not limited		Somewhat limited Slope	0.63
179E2: Gara, moderately eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
179E3: Gara, severely eroded-----	75	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
179F2: Gara, moderately eroded-----	85	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
179F3: Gara, severely eroded-----	90	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
180: Keomah-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
220: Nodaway, occasionally flooded-----	85	Not limited		Not limited		Somewhat limited Flooding	0.60
279: Taintor-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
280: Mahaska-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
281B: Otley-----	100	Not limited		Not limited		Somewhat limited Depth to saturated zone	0.19
281C: Otley-----	90	Not limited		Not limited		Somewhat limited Depth to saturated zone	0.19
281C2: Otley, moderately eroded-----	85	Not limited		Not limited		Somewhat limited Depth to saturated zone	0.19
281D2: Otley, moderately eroded-----	80	Not limited		Not limited		Somewhat limited Slope Depth to saturated zone	0.63 0.19
281D3: Otley, severely eroded-----	80	Not limited		Not limited		Somewhat limited Slope Depth to saturated zone	0.63 0.19
281E2: Otley, moderately eroded-----	85	Somewhat limited Slope	0.02	Not limited		Very limited Slope Depth to saturated zone	1.00 0.19
291: Atterberry-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293C:							
Fayette-----	45	Not limited		Not limited		Not limited	
Chelsea-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.48
Tell-----	20	Not limited		Not limited		Not limited	
293D:							
Fayette-----	45	Not limited		Not limited		Somewhat limited Slope	0.63
Chelsea-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Slope Droughty	0.63 0.48
Tell-----	20	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
293D2:							
Fayette, moderately eroded-----	45	Not limited		Not limited		Somewhat limited Slope	0.63
Chelsea, moderately eroded-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Slope Droughty	0.63 0.48
Tell, moderately eroded-----	20	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
293E:							
Fayette-----	40	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Chelsea-----	35	Somewhat limited Too sandy Slope	0.95 0.02	Somewhat limited Too sandy	0.95	Very limited Slope Droughty	1.00 0.48
Tell-----	25	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00
293E2:							
Fayette, moderately eroded-----	40	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Chelsea, moderately eroded-----	35	Somewhat limited Too sandy Slope	0.95 0.02	Somewhat limited Too sandy	0.95	Very limited Slope Droughty	1.00 0.48
Tell, moderately eroded-----	25	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293G:							
Fayette-----	40	Very limited Slope	1.00	Somewhat limited Slope	0.22	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope Too sandy	1.00 0.95	Somewhat limited Too sandy Slope	0.95 0.22	Very limited Slope Droughty	1.00 0.48
Tell-----	25	Very limited Water erosion Slope	1.00 1.00	Very limited Water erosion Slope	1.00 0.22	Very limited Slope	1.00
353B:							
Tell-----	85	Not limited		Not limited		Not limited	
353C:							
Tell-----	90	Not limited		Not limited		Not limited	
353C2:							
Tell, moderately eroded-----	90	Not limited		Not limited		Not limited	
353D2:							
Tell, moderately eroded-----	90	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
377B:							
Dinsdale-----	100	Not limited		Not limited		Not limited	
377C:							
Dinsdale-----	85	Not limited		Not limited		Not limited	
420:							
Tama, terrace-----	100	Not limited		Not limited		Not limited	
420B:							
Tama, terrace-----	100	Not limited		Not limited		Not limited	
422:							
Amana, occasionally flooded-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
424D2:							
Lindley, moderately eroded-----	50	Not limited		Not limited		Somewhat limited Slope	0.63
Keswick, moderately eroded-----	35	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424E2: Lindley, moderately eroded-----	45	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone Water erosion Slope	1.00 1.00 0.02	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
424E3: Lindley, severely eroded-----	45	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Keswick, severely eroded-----	40	Very limited Depth to saturated zone Water erosion Slope	1.00 1.00 0.02	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00
424F2: Lindley, moderately eroded-----	65	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
Keswick, moderately eroded-----	25	Very limited Depth to saturated zone Water erosion Slope	1.00 1.00 0.82	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.63
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Water erosion	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 0.63
428B: Ely-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
430: Ackmore, occasionally flooded-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
450: Pillot-----	100	Not limited		Not limited		Not limited	
450B: Pillot-----	90	Not limited		Not limited		Not limited	
450C: Pillot-----	85	Not limited		Not limited		Not limited	
453: Tuskeego, rarely flooded-----	75	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
462B: Downs, terrace-----	90	Not limited		Not limited		Not limited	
463B: Fayette, terrace----	100	Not limited		Not limited		Not limited	
463C2: Fayette, moderately eroded, terrace----	90	Not limited		Not limited		Not limited	
463D2: Fayette, moderately eroded, terrace----	90	Not limited		Not limited		Somewhat limited Slope	0.63
463D3: Fayette, severely eroded, terrace----	80	Not limited		Not limited		Somewhat limited Slope	0.63
463E2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
463E3: Fayette, severely eroded, terrace----	90	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
463F2: Fayette, moderately eroded, terrace----	85	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463F3: Fayette, severely eroded, terrace----	90	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
484: Lawson, occasionally flooded-----	80	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
587: Chequest, occasionally flooded-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
587+: Chequest, occasionally flooded, overwash--	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
626: Hayfield-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
663D2: Seaton, moderately eroded-----	85	Very limited Water erosion	1.00	Very limited Water erosion	1.00	Somewhat limited Slope	0.63
663E2: Seaton, moderately eroded-----	85	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00
663E3: Seaton, severely eroded-----	80	Very limited Water erosion Slope	1.00 0.02	Very limited Water erosion	1.00	Very limited Slope	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Water erosion Slope	1.00 0.82	Very limited Water erosion	1.00	Very limited Slope	1.00
687: Watkins, rarely flooded-----	90	Not limited		Not limited		Not limited	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
687B: Watkins, rarely flooded-----	100	Not limited		Not limited		Not limited	
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
771B: Waubee-----	90	Not limited		Not limited		Not limited	
771C2: Waubee, moderately eroded-----	90	Not limited		Not limited		Not limited	
792D2: Armstrong, moderately eroded--	75	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
876B: Ladoga, terrace----	90	Not limited		Not limited		Not limited	
876C: Ladoga, terrace----	80	Not limited		Not limited		Not limited	
876C2: Ladoga, moderately eroded, terrace----	85	Not limited		Not limited		Not limited	
876D2: Ladoga, moderately eroded, terrace----	90	Not limited		Not limited		Somewhat limited Slope	0.63
881B: Otley, terrace-----	95	Not limited		Not limited		Somewhat limited Depth to saturated zone	0.19
911B: Colo-----	55	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
Ely-----	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
993D2: Gara, moderately eroded-----	45	Not limited		Not limited		Somewhat limited Slope	0.63

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993D2: Armstrong, moderately eroded--	35	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 0.63
993E2: Gara, moderately eroded-----	45	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Armstrong, moderately eroded--	40	Very limited Depth to saturated zone Slope	1.00 0.02	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Slope	1.00 1.00
993F2: Gara, moderately eroded-----	65	Somewhat limited Slope	0.82	Not limited		Very limited Slope	1.00
Armstrong, moderately eroded--	25	Very limited Depth to saturated zone Slope	1.00 0.82	Very limited Depth to saturated zone	1.00	Very limited Slope Depth to saturated zone	1.00 1.00
1160: Walford, terrace----	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
1220: Nodaway, frequently flooded, channeled	75	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
1291: Atterberry, terrace	95	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
1354: Aguents, ponded-----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Not limited		Not limited		Not limited	
Sparta-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.07
Pillot-----	20	Not limited		Not limited		Not limited	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442C:							
Tama-----	40	Not limited		Not limited		Not limited	
Sparta-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.07
Pillot-----	20	Not limited		Not limited		Not limited	
1442C2:							
Tama, moderately eroded-----	40	Not limited		Not limited		Not limited	
Sparta, moderately eroded-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Droughty	0.17
Pillot, moderately eroded-----	20	Not limited		Not limited		Not limited	
1442D2:							
Tama, moderately eroded-----	40	Not limited		Not limited		Somewhat limited Slope	0.63
Sparta, moderately eroded-----	35	Somewhat limited Too sandy	0.95	Somewhat limited Too sandy	0.95	Somewhat limited Slope Droughty	0.63 0.17
Pillot, moderately eroded-----	20	Not limited		Not limited		Somewhat limited Slope	0.63
1442E2:							
Tama, moderately eroded-----	40	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
Sparta, moderately eroded-----	35	Somewhat limited Too sandy Slope	0.95 0.02	Somewhat limited Too sandy	0.95	Very limited Slope Droughty	1.00 0.17
Pillot, moderately eroded-----	20	Somewhat limited Slope	0.02	Not limited		Very limited Slope	1.00
1540:							
Quiver, frequently flooded-----	40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Flooding Depth to saturated zone	1.00 1.00
Zook, frequently flooded-----	30	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Flooding Depth to saturated zone	1.00 1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1540: Klum, frequently flooded-----	15	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
2219: Ella, rarely flooded	70	Not limited		Not limited		Not limited	
2219B: Ella, rarely flooded	75	Not limited		Not limited		Not limited	
2219C2: Ella, moderately eroded-----	80	Not limited		Not limited		Not limited	
2422: Amana, occasionally flooded-----	50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
Nodaway, occasionally flooded-----	30	Not limited		Not limited		Somewhat limited Flooding	0.60
Lawson, occasionally flooded-----	20	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Flooding	1.00 0.60
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
6422: Amana, frequently flooded-----	90	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Flooding Depth to saturated zone	1.00 1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary, which is in Part I of this publication.

Building Site Development

The titles of the tables described in this section are:

- “Dwellings and Small Commercial Buildings”
- “Roads and Streets, Shallow Excavations, and Lawns and Landscaping”

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The tables described in this section show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Dwellings and Small Commercial Buildings

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
Colo-----	35	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
7: Wiota, rarely flooded-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
7B: Wiota, rarely flooded-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
8B: Judson-----	95	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
24C2: Shelby, moderately eroded-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
24D2: Shelby, moderately eroded-----	70	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
24D3: Shelby, severely eroded-----	90	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
24E2: Shelby, moderately eroded-----	85	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E3: Shelby, severely eroded-----	95	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
41: Sparta-----	100	Not limited		Not limited		Not limited	
41B: Sparta-----	100	Not limited		Not limited		Not limited	
41C: Sparta-----	85	Not limited		Not limited		Somewhat limited Slope	0.88
41D: Sparta-----	75	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
43: Bremer, rarely flooded-----	100	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
51: Vesser, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00
54: Zook, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
54+: Zook, occasionally flooded, overwash--	100	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
63C: Chelsea-----	90	Not limited		Not limited		Somewhat limited Slope	0.88
63E: Chelsea-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
63G: Chelsea-----	95	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
65D2: Lindley, moderately eroded-----	85	Somewhat limited Slope Shrink-swell	0.63 0.32	Somewhat limited Slope Shrink-swell	0.63 0.32	Very limited Slope Shrink-swell	1.00 0.32
65D3: Lindley, severely eroded-----	85	Somewhat limited Slope Shrink-swell	0.63 0.32	Somewhat limited Slope Shrink-swell	0.63 0.06	Very limited Slope Shrink-swell	1.00 0.32
65E2: Lindley, moderately eroded-----	85	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
65E3: Lindley, severely eroded-----	85	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.06	Very limited Slope Shrink-swell	1.00 0.32
65F: Lindley-----	100	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
65F2: Lindley, moderately eroded-----	80	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
65F3: Lindley, severely eroded-----	90	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.06	Very limited Slope Shrink-swell	1.00 0.32
65G: Lindley-----	100	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
75: Givin-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76B: Ladoga-----	95	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00
76C: Ladoga-----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
76C2: Ladoga, moderately eroded-----	95	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
76D: Ladoga-----	90	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
76D2: Ladoga, moderately eroded-----	90	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
76D3: Ladoga, severely eroded-----	85	Very limited Shrink-swell Slope	1.00 0.63	Somewhat limited Slope Depth to saturated zone Shrink-swell	0.63 0.61 0.06	Very limited Slope Shrink-swell	1.00 1.00
76E2: Ladoga, moderately eroded-----	70	Very limited Shrink-swell Slope	1.00 1.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.61	Very limited Slope Shrink-swell	1.00 1.00
76E3: Ladoga, severely eroded-----	85	Very limited Shrink-swell Slope	1.00 1.00	Very limited Slope Depth to saturated zone Shrink-swell	1.00 0.61 0.06	Very limited Slope Shrink-swell	1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80B: Clinton-----	100	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00
80C: Clinton-----	95	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
80C2: Clinton, moderately eroded-----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
80D: Clinton-----	90	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
80D2: Clinton, moderately eroded-----	85	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
80D3: Clinton, severely eroded-----	75	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
80E2: Clinton, moderately eroded-----	90	Very limited Shrink-swell Slope	1.00 1.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.61	Very limited Slope Shrink-swell	1.00 1.00
80E3: Clinton, severely eroded-----	70	Very limited Shrink-swell Slope	1.00 1.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.61	Very limited Slope Shrink-swell	1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80F2: Clinton, moderately eroded-----	90	Very limited Slope Shrink-swell	1.00 1.00	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 0.61	Very limited Slope Shrink-swell	1.00 1.00
83B: Kenyon-----	75	Not limited		Somewhat limited Depth to saturated zone	0.61	Not limited	
83C: Kenyon-----	80	Not limited		Somewhat limited Depth to saturated zone	0.61	Somewhat limited Slope	0.88
83C2: Kenyon, moderately eroded-----	85	Not limited		Somewhat limited Depth to saturated zone	0.61	Somewhat limited Slope	0.88
83D2: Kenyon, moderately eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope Depth to saturated zone	0.63 0.61	Very limited Slope	1.00
88: Nevin, rarely flooded-----	90	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
93D2: Shelby, moderately eroded-----	50	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.92
93D3: Shelby, severely eroded-----	50	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
93D3: Adair, severely eroded-----	30	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.92
93E2: Shelby, moderately eroded-----	60	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.92	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.92	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.92
119: Muscatine-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00
120B: Tama-----	95	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
120C: Tama-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
120C2: Tama, moderately eroded-----	75	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
120D2: Tama, moderately eroded-----	85	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
120D3: Tama, severely eroded-----	80	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
120E2: Tama, moderately eroded-----	80	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
122: Sperry-----	95	Very limited Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.32	Very limited Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.32	Very limited Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.32
133: Colo, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
133+: Colo, occasionally flooded, overwash--	90	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
162B: Downs-----	95	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
162C: Downs-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
162C2: Downs, moderately eroded-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
162D2: Downs, moderately eroded-----	85	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
162D3: Downs, severely eroded-----	80	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
162E2: Downs, moderately eroded-----	75	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162E3: Downs, severely eroded-----	75	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163B: Fayette-----	95	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
163C: Fayette-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
163C2: Fayette, moderately eroded-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
163D: Fayette-----	85	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
163D2: Fayette, moderately eroded-----	65	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
163D3: Fayette, severely eroded-----	60	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
163E: Fayette-----	75	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163E2: Fayette, moderately eroded-----	70	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163E3: Fayette, severely eroded-----	70	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163F: Fayette-----	75	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163F2: Fayette, moderately eroded-----	70	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163F3: Fayette, severely eroded-----	70	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
163G: Fayette-----	85	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
165: Stronghurst-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
171C2: Bassett, moderately eroded-----	85	Not limited		Somewhat limited Depth to saturated zone	0.61	Somewhat limited Slope	0.88
171D2: Bassett, moderately eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope Depth to saturated zone	0.63 0.61	Very limited Slope	1.00
171D3: Bassett, severely eroded-----	75	Somewhat limited Slope	0.63	Somewhat limited Slope Depth to saturated zone	0.63 0.61	Very limited Slope	1.00
171E2: Bassett, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope Depth to saturated zone	1.00 0.61	Very limited Slope	1.00
171E3: Bassett, severely eroded-----	75	Very limited Slope	1.00	Very limited Slope Depth to saturated zone	1.00 0.61	Very limited Slope	1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
172: Wabash, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
175: Dickinson-----	100	Not limited		Not limited		Not limited	
175B: Dickinson-----	95	Not limited		Not limited		Not limited	
175C: Dickinson-----	85	Not limited		Not limited		Somewhat limited Slope	0.88
178: Waukee-----	90	Not limited		Not limited		Not limited	
178B: Waukee-----	100	Not limited		Not limited		Not limited	
178C: Waukee-----	100	Not limited		Not limited		Somewhat limited Slope	0.88
179D2: Gara, moderately eroded-----	80	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
179D3: Gara, severely eroded-----	70	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
179E2: Gara, moderately eroded-----	85	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
179E3: Gara, severely eroded-----	75	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
179F2: Gara, moderately eroded-----	85	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179F3: Gara, severely eroded-----	90	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
180: Keomah-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.92
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.92 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.92
220: Nodaway, occasionally flooded-----	85	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
279: Taintor-----	90	Very limited Depth to saturated zone Shrink-swell	1.00 0.82	Very limited Depth to saturated zone Shrink-swell	1.00 0.18	Very limited Depth to saturated zone Shrink-swell	1.00 0.82
280: Mahaska-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
281B: Otley-----	100	Very limited Shrink-swell Depth to saturated zone	1.00 0.39	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.39

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281C: Otley-----	90	Very limited Shrink-swell Depth to saturated zone	1.00 0.39	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.88 0.39
281C2: Otley, moderately eroded-----	85	Very limited Shrink-swell Depth to saturated zone	1.00 0.39	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.88 0.39
281D2: Otley, moderately eroded-----	80	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.39	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 0.39
281D3: Otley, severely eroded-----	80	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.39	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 0.39
281E2: Otley, moderately eroded-----	85	Very limited Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.39	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00	Very limited Slope Shrink-swell Depth to saturated zone	1.00 1.00 0.39
291: Atterberry-----	90	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
293C: Fayette-----	45	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
Chelsea-----	35	Not limited		Not limited		Somewhat limited Slope	0.88
Tell-----	20	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Slope Shrink-swell	0.88 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D:							
Fayette-----	45	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
Chelsea-----	35	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Tell-----	20	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope	0.63	Very limited Slope Shrink-swell	1.00 0.50
293D2:							
Fayette, moderately eroded-----	45	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
Chelsea, moderately eroded-----	35	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Tell, moderately eroded-----	20	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
293E:							
Fayette-----	40	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Chelsea-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Tell-----	25	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope	1.00	Very limited Slope Shrink-swell	1.00 0.50
293E2:							
Fayette, moderately eroded-----	40	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Chelsea, moderately eroded-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Tell, moderately eroded-----	25	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
293G:							
Fayette-----	40	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Chelsea-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293G: Tell-----	25	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope	1.00	Very limited Slope Shrink-swell	1.00 0.50
353B: Tell-----	85	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
353C: Tell-----	90	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Slope Shrink-swell	0.88 0.50
353C2: Tell, moderately eroded-----	90	Not limited		Not limited		Somewhat limited Slope	0.88
353D2: Tell, moderately eroded-----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
377B: Dinsdale-----	100	Somewhat limited Shrink-swell	0.68	Somewhat limited Depth to saturated zone	0.61	Somewhat limited Shrink-swell	0.68
377C: Dinsdale-----	85	Somewhat limited Shrink-swell	0.68	Somewhat limited Depth to saturated zone	0.61	Somewhat limited Slope Shrink-swell	0.88 0.68
420: Tama, terrace-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
420B: Tama, terrace-----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
422: Amana, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
424D2: Lindley, moderately eroded-----	50	Somewhat limited Slope Shrink-swell	0.63 0.32	Somewhat limited Slope Shrink-swell	0.63 0.32	Very limited Slope Shrink-swell	1.00 0.32

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424D2: Keswick, moderately eroded-----	35	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
424E2: Lindley, moderately eroded-----	45	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.99	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
424E3: Lindley, severely eroded-----	45	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.06	Very limited Slope Shrink-swell	1.00 0.32
Keswick, severely eroded-----	40	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.99	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.99	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.99
424F2: Lindley, moderately eroded-----	65	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32	Very limited Slope Shrink-swell	1.00 0.32
Keswick, moderately eroded-----	25	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.99	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.99 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.99
428B: Ely-----	95	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
430: Ackmore, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
450: Pillot-----	100	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
450B: Pillot-----	90	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
450C: Pillot-----	85	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Slope Shrink-swell	0.88 0.50
453: Tuskeego, rarely flooded-----	75	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
462B: Downs, terrace-----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
463B: Fayette, terrace----	100	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
463C2: Fayette, moderately eroded, terrace----	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463D2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
463D3: Fayette, severely eroded, terrace----	80	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
484: Lawson, occasionally flooded-----	80	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00
587: Chequest, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
587+: Chequest, occasionally flooded, overwash--	95	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
626: Hayfield-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
663D2: Seaton, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
663E2: Seaton, moderately eroded-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663E3: Seaton, severely eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
687: Watkins, rarely flooded-----	90	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
687B: Watkins, rarely flooded-----	100	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
688: Koszta, rarely flooded-----	95	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
771B: Waubeek-----	90	Somewhat limited Shrink-swell	0.18	Somewhat limited Depth to saturated zone	0.61	Somewhat limited Shrink-swell	0.18

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
771C2: Waubeek, moderately eroded-----	90	Somewhat limited Shrink-swell	0.18	Somewhat limited Depth to saturated zone	0.61	Somewhat limited Slope Shrink-swell	0.88 0.18
792D2: Armstrong, moderately eroded--	75	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.82 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
876B: Ladoga, terrace----	90	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell	1.00
876C: Ladoga, terrace----	80	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
876C2: Ladoga, moderately eroded, terrace----	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.61	Very limited Shrink-swell Slope	1.00 0.88
876D2: Ladoga, moderately eroded, terrace----	90	Very limited Shrink-swell Slope	1.00 0.63	Very limited Shrink-swell Slope Depth to saturated zone	1.00 0.63 0.61	Very limited Slope Shrink-swell	1.00 1.00
881B: Otley, terrace-----	95	Very limited Shrink-swell Depth to saturated zone	1.00 0.39	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Shrink-swell Depth to saturated zone	1.00 0.39
911B: Colo-----	55	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50
Ely-----	35	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993D2: Gara, moderately eroded-----	45	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
Armstrong, moderately eroded--	35	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Shrink-swell Slope	1.00 0.82 0.63	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
993E2: Gara, moderately eroded-----	45	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Armstrong, moderately eroded--	40	Very limited Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Shrink-swell	1.00 1.00 0.82	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
993F2: Gara, moderately eroded-----	65	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Armstrong, moderately eroded--	25	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 0.82	Very limited Slope Depth to saturated zone Shrink-swell	1.00 1.00 1.00
1160: Walford, terrace----	95	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00	Very limited Depth to saturated zone Shrink-swell	1.00 1.00
1220: Nodaway, frequently flooded, channeled	75	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
1291: Atterberry, terrace	95	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50	Very limited Depth to saturated zone Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1354: Aquents, ponded-----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Sparta-----	35	Not limited		Not limited		Not limited	
Pillot-----	20	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
1442C: Tama-----	40	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
Sparta-----	35	Not limited		Not limited		Somewhat limited Slope	0.88
Pillot-----	20	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Slope Shrink-swell	0.88 0.50
1442C2: Tama, moderately eroded-----	40	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Slope Shrink-swell	0.88 0.50
Sparta, moderately eroded-----	35	Not limited		Not limited		Somewhat limited Slope	0.88
Pillot, moderately eroded-----	20	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Slope Shrink-swell	0.88 0.50
1442D2: Tama, moderately eroded-----	40	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope Shrink-swell	0.63 0.50	Very limited Slope Shrink-swell	1.00 0.50
Sparta, moderately eroded-----	35	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
Pillot, moderately eroded-----	20	Somewhat limited Slope Shrink-swell	0.63 0.50	Somewhat limited Slope	0.63	Very limited Slope Shrink-swell	1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442E2: Tama, moderately eroded-----	40	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope Shrink-swell	1.00 0.50
Sparta, moderately eroded-----	35	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Pillot, moderately eroded-----	20	Very limited Slope Shrink-swell	1.00 0.50	Very limited Slope	1.00	Very limited Slope Shrink-swell	1.00 0.50
1540: Quiver, frequently flooded-----	40	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
Zook, frequently flooded-----	30	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 1.00
Klum, frequently flooded-----	15	Very limited Flooding	1.00	Very limited Flooding Depth to saturated zone	1.00 0.61	Very limited Flooding	1.00
2219: Ella, rarely flooded	70	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
2219B: Ella, rarely flooded	75	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
2219C2: Ella, moderately eroded-----	80	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Slope Shrink-swell	1.00 0.88 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2422: Amana, occasionally flooded-----	50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
Nodaway, occasionally flooded-----	30	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
Lawson, occasionally flooded-----	20	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	1.00 0.61 0.50	Very limited Flooding Shrink-swell	1.00 0.50
6422: Amana, frequently flooded-----	90	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
Colo-----	35	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
7: Wiota, rarely flooded-----	100	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
7B: Wiota, rarely flooded-----	100	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
8B: Judson-----	95	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
24C2: Shelby, moderately eroded-----	85	Very limited Low strength Shrink-swell Frost action	1.00 0.50 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
24D2: Shelby, moderately eroded-----	70	Very limited Low strength Slope Shrink-swell	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
24D3: Shelby, severely eroded-----	90	Very limited Low strength Slope Shrink-swell	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E2: Shelby, moderately eroded-----	85	Very limited Slope Low strength Shrink-swell	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
24E3: Shelby, severely eroded-----	95	Very limited Slope Low strength Shrink-swell	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
41: Sparta-----	100	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.07
41B: Sparta-----	100	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.07
41C: Sparta-----	85	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.07
41D: Sparta-----	75	Somewhat limited Slope	0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.07
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
51: Vesser, occasionally flooded-----	95	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
54: Zook, occasionally flooded-----	100	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
54+: Zook, occasionally flooded, overwash--	100	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
63C: Chelsea-----	90	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.48
63E: Chelsea-----	95	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.48
63G: Chelsea-----	95	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.48
65D2: Lindley, moderately eroded-----	85	Very limited Low strength Slope Frost action	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
65D3: Lindley, severely eroded-----	85	Very limited Low strength Slope Frost action	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
65E2: Lindley, moderately eroded-----	85	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
65E3: Lindley, severely eroded-----	85	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
65F: Lindley-----	100	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65F2: Lindley, moderately eroded-----	80	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
65F3: Lindley, severely eroded-----	90	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
65G: Lindley-----	100	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
75: Givin-----	95	Very limited Shrink-swell Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
76B: Ladoga-----	95	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
76C: Ladoga-----	85	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
76C2: Ladoga, moderately eroded-----	95	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
76D: Ladoga-----	90	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63
76D2: Ladoga, moderately eroded-----	90	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76D3: Ladoga, severely eroded-----	85	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63
76E2: Ladoga, moderately eroded-----	70	Very limited Shrink-swell Low strength Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Cutbanks cave	1.00 0.61 0.10	Very limited Slope	1.00
76E3: Ladoga, severely eroded-----	85	Very limited Shrink-swell Low strength Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Cutbanks cave	1.00 0.61 0.10	Very limited Slope	1.00
80B: Clinton-----	100	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
80C: Clinton-----	95	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
80C2: Clinton, moderately eroded-----	85	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
80D: Clinton-----	90	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63
80D2: Clinton, moderately eroded-----	85	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80D3: Clinton, severely eroded-----	75	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63
80E2: Clinton, moderately eroded-----	90	Very limited Shrink-swell Low strength Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Cutbanks cave	1.00 0.61 0.10	Very limited Slope	1.00
80E3: Clinton, severely eroded-----	70	Very limited Shrink-swell Low strength Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Cutbanks cave	1.00 0.61 0.10	Very limited Slope	1.00
80F2: Clinton, moderately eroded-----	90	Very limited Shrink-swell Slope Low strength	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Cutbanks cave	1.00 0.61 0.10	Very limited Slope	1.00
83B: Kenyon-----	75	Somewhat limited Frost action Low strength	0.50 0.22	Somewhat limited Depth to saturated zone Dense layer Cutbanks cave	0.61 0.50 0.10	Not limited	
83C: Kenyon-----	80	Somewhat limited Frost action Low strength	0.50 0.22	Somewhat limited Depth to saturated zone Dense layer Cutbanks cave	0.61 0.50 0.10	Not limited	
83C2: Kenyon, moderately eroded-----	85	Somewhat limited Frost action Low strength	0.50 0.22	Somewhat limited Depth to saturated zone Dense layer Cutbanks cave	0.61 0.50 0.10	Not limited	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
83D2: Kenyon, moderately eroded-----	80	Somewhat limited Slope Frost action Low strength	0.63 0.50 0.22	Somewhat limited Slope Depth to saturated zone Dense layer	0.63 0.61 0.50	Somewhat limited Slope	0.63
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
93D2: Shelby, moderately eroded-----	50	Very limited Low strength Slope Shrink-swell	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 0.63 0.10	Very limited Depth to saturated zone Slope	1.00 0.63
93D3: Shelby, severely eroded-----	50	Very limited Low strength Slope Shrink-swell	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
Adair, severely eroded-----	30	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 0.63 0.10	Very limited Depth to saturated zone Slope	1.00 0.63
93E2: Shelby, moderately eroded-----	60	Very limited Slope Low strength Shrink-swell	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Frost action Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 1.00 0.10	Very limited Depth to saturated zone Slope	1.00 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
119: Muscatine-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
120B: Tama-----	95	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
120C: Tama-----	85	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
120C2: Tama, moderately eroded-----	75	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
120D2: Tama, moderately eroded-----	85	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
120D3: Tama, severely eroded-----	80	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
120E2: Tama, moderately eroded-----	80	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
122: Sperry-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Cutbanks cave	1.00 1.00 0.10	Very limited Depth to saturated zone Ponding	1.00 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
133: Colo, occasionally flooded-----	90	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
133+: Colo, occasionally flooded, overwash--	90	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
162B: Downs-----	95	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
162C: Downs-----	85	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
162C2: Downs, moderately eroded-----	85	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
162D2: Downs, moderately eroded-----	85	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
162D3: Downs, severely eroded-----	80	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
162E2: Downs, moderately eroded-----	75	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162E3: Downs, severely eroded-----	75	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163B: Fayette-----	95	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
163C: Fayette-----	90	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
163C2: Fayette, moderately eroded-----	85	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
163D: Fayette-----	85	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
163D2: Fayette, moderately eroded-----	65	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
163D3: Fayette, severely eroded-----	60	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
163E: Fayette-----	75	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163E2: Fayette, moderately eroded-----	70	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163E3: Fayette, severely eroded-----	70	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163F: Fayette-----	75	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163F2: Fayette, moderately eroded-----	70	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163F3: Fayette, severely eroded-----	70	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
163G: Fayette-----	85	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
165: Stronghurst-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
171C2: Bassett, moderately eroded-----	85	Somewhat limited Frost action Low strength	0.50 0.22	Somewhat limited Depth to saturated zone Dense layer Cutbanks cave	0.61 0.50 0.10	Not limited	
171D2: Bassett, moderately eroded-----	80	Somewhat limited Slope Frost action Low strength	0.63 0.50 0.22	Somewhat limited Slope Depth to saturated zone Dense layer	0.63 0.61 0.50	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171D3: Bassett, severely eroded-----	75	Somewhat limited Slope Frost action Low strength	0.63 0.50 0.22	Somewhat limited Slope Depth to saturated zone Dense layer	0.63 0.61 0.50	Somewhat limited Slope	0.63
171E2: Bassett, moderately eroded-----	80	Very limited Slope Frost action Low strength	1.00 0.50 0.22	Very limited Slope Depth to saturated zone Dense layer	1.00 0.61 0.50	Very limited Slope	1.00
171E3: Bassett, severely eroded-----	75	Very limited Slope Frost action Low strength	1.00 0.50 0.22	Very limited Slope Depth to saturated zone Dense layer	1.00 0.61 0.50	Very limited Slope	1.00
172: Wabash, occasionally flooded-----	100	Very limited Shrink-swell Depth to saturated zone Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Too clayey	1.00 0.60 0.50	Very limited Depth to saturated zone Too clayey Flooding	1.00 1.00 0.60
175: Dickinson-----	100	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
175B: Dickinson-----	95	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
175C: Dickinson-----	85	Somewhat limited Frost action	0.50	Very limited Cutbanks cave	1.00	Not limited	
178: Waukee-----	90	Not limited		Very limited Cutbanks cave	1.00	Not limited	
178B: Waukee-----	100	Not limited		Very limited Cutbanks cave	1.00	Not limited	
178C: Waukee-----	100	Not limited		Very limited Cutbanks cave	1.00	Not limited	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179D2: Gara, moderately eroded-----	80	Very limited Low strength Slope Shrink-swell	 1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	 0.63 0.10	Somewhat limited Slope	 0.63
179D3: Gara, severely eroded-----	70	Very limited Low strength Slope Shrink-swell	 1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	 0.63 0.10	Somewhat limited Slope	 0.63
179E2: Gara, moderately eroded-----	85	Very limited Slope Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	 1.00
179E3: Gara, severely eroded-----	75	Very limited Slope Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	 1.00
179F2: Gara, moderately eroded-----	85	Very limited Slope Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	 1.00
179F3: Gara, severely eroded-----	90	Very limited Slope Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	 1.00
180: Keomah-----	95	Very limited Depth to saturated zone Frost action Low strength	 1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	 1.00 0.10	Very limited Depth to saturated zone	 1.00
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone Frost action Low strength	 1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	 1.00 0.63 0.10	Very limited Depth to saturated zone Slope	 1.00 0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 0.63 0.10	Very limited Depth to saturated zone Slope	1.00 0.63
220: Nodaway, occasionally flooded-----	85	Very limited Frost action Flooding Low strength	1.00 1.00 1.00	Somewhat limited Depth to saturated zone Flooding Cutbanks cave	0.61 0.60 0.10	Somewhat limited Flooding	0.60
279: Taintor-----	90	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
280: Mahaska-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
281B: Otley-----	100	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Somewhat limited Depth to saturated zone	0.19
281C: Otley-----	90	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Somewhat limited Depth to saturated zone	0.19
281C2: Otley, moderately eroded-----	85	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Somewhat limited Depth to saturated zone	0.19
281D2: Otley, moderately eroded-----	80	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 0.63 0.10	Somewhat limited Slope Depth to saturated zone	0.63 0.19

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281D3: Otley, severely eroded-----	80	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 1.00 0.63 0.10	Somewhat limited Slope Depth to saturated zone	0.63 0.19
281E2: Otley, moderately eroded-----	85	Very limited Shrink-swell Low strength Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Cutbanks cave	1.00 1.00 1.00 0.10	Very limited Slope Depth to saturated zone	1.00 0.19
291: Atterberry-----	90	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 1.00 0.10	Very limited Depth to saturated zone	1.00
293C: Fayette-----	45	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Chelsea-----	35	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.48
Tell-----	20	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
293D: Fayette-----	45	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
Chelsea-----	35	Somewhat limited Slope	0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.48
Tell-----	20	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
293D2: Fayette, moderately eroded-----	45	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D2: Chelsea, moderately eroded-----	35	Somewhat limited Slope	0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope Droughty	0.63 0.48
Tell, moderately eroded-----	20	Very limited Frost action Slope	1.00 0.63	Very limited Cutbanks cave Slope	1.00 0.63	Somewhat limited Slope	0.63
293E: Fayette-----	40	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.48
Tell-----	25	Very limited Frost action Slope Low strength	1.00 1.00 1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope	1.00
293E2: Fayette, moderately eroded-----	40	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Chelsea, moderately eroded-----	35	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.48
Tell, moderately eroded-----	25	Very limited Frost action Slope	1.00 1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope	1.00
293G: Fayette-----	40	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.48
Tell-----	25	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
353B: Tell-----	85	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Cutbanks cave	 1.00	Not limited	
353C: Tell-----	90	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Cutbanks cave	 1.00	Not limited	
353C2: Tell, moderately eroded-----	90	Very limited Frost action	 1.00	Very limited Cutbanks cave	 1.00	Not limited	
353D2: Tell, moderately eroded-----	90	Very limited Frost action Slope	 1.00 0.63	Very limited Cutbanks cave Slope	 1.00 0.63	Somewhat limited Slope	0.63
377B: Dinsdale-----	100	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.68	Somewhat limited Depth to saturated zone Cutbanks cave	 0.61 0.10	Not limited	
377C: Dinsdale-----	85	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.68	Somewhat limited Depth to saturated zone Cutbanks cave	 0.61 0.10	Not limited	
420: Tama, terrace-----	100	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
420B: Tama, terrace-----	100	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
422: Amana, occasionally flooded-----	90	Very limited Depth to saturated zone Frost action Flooding	 1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	 1.00 0.60

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424D2: Lindley, moderately eroded-----	50	Very limited Low strength Slope Frost action	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
Keswick, moderately eroded-----	35	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.28	Very limited Depth to saturated zone Slope	1.00 0.63
424E2: Lindley, moderately eroded-----	45	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.28	Very limited Depth to saturated zone Slope	1.00 1.00
424E3: Lindley, severely eroded-----	45	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Keswick, severely eroded-----	40	Very limited Depth to saturated zone Frost action Slope	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.28	Very limited Depth to saturated zone Slope	1.00 1.00
424F2: Lindley, moderately eroded-----	65	Very limited Slope Low strength Frost action	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Keswick, moderately eroded-----	25	Very limited Depth to saturated zone Slope Frost action	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Too clayey	1.00 1.00 0.28	Very limited Slope Depth to saturated zone	1.00 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.28	Very limited Depth to saturated zone Slope	1.00 0.63
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.28	Very limited Depth to saturated zone Slope	1.00 0.63
428B: Ely-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
430: Ackmore, occasionally flooded-----	100	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
450: Pillot-----	100	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
450B: Pillot-----	90	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
450C: Pillot-----	85	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
453: Tuskeego, rarely flooded-----	75	Very limited Depth to saturated zone Low strength Shrink-swell	1.00 1.00 0.50	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
462B: Downs, terrace-----	90	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
463B: Fayette, terrace----	100	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
463C2: Fayette, moderately eroded, terrace----	90	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
463D2: Fayette, moderately eroded, terrace----	90	Very limited Frost action Low strength Slope	 1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	 0.63 0.10	Somewhat limited Slope	0.63
463D3: Fayette, severely eroded, terrace----	80	Very limited Frost action Low strength Slope	 1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	 0.63 0.10	Somewhat limited Slope	0.63
463E2: Fayette, moderately eroded, terrace----	90	Very limited Frost action Low strength Slope	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	1.00
463E3: Fayette, severely eroded, terrace----	90	Very limited Frost action Low strength Slope	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	1.00
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope Frost action Low strength	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	1.00
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope Frost action Low strength	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
484: Lawson, occasionally flooded-----	80	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
587: Chequest, occasionally flooded-----	95	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
587+: Chequest, occasionally flooded, overwash--	95	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
626: Hayfield-----	90	Very limited Depth to saturated zone Frost action	1.00 1.00	Very limited Cutbanks cave Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
663D2: Seaton, moderately eroded-----	85	Very limited Frost action Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
663E2: Seaton, moderately eroded-----	85	Very limited Frost action Slope Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
663E3: Seaton, severely eroded-----	80	Very limited Frost action Slope Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope Frost action Low strength	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
687: Watkins, rarely flooded-----	90	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
687B: Watkins, rarely flooded-----	100	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
771B: Waubeek-----	90	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.18	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
771C2: Waubeek, moderately eroded-----	90	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.18	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
792D2: Armstrong, moderately eroded--	75	Very limited Shrink-swell Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.32	Very limited Depth to saturated zone Slope	1.00 0.63
876B: Ladoga, terrace----	90	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
876C: Ladoga, terrace----	80	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
876C2: Ladoga, moderately eroded, terrace----	85	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
876D2: Ladoga, moderately eroded, terrace----	90	Very limited Shrink-swell Low strength Slope	1.00 1.00 0.63	Somewhat limited Slope Depth to saturated zone Cutbanks cave	0.63 0.61 0.10	Somewhat limited Slope	0.63
881B: Otley, terrace-----	95	Very limited Shrink-swell Low strength Frost action	1.00 1.00 0.50	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Somewhat limited Depth to saturated zone	0.19
911B: Colo-----	55	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
Ely-----	35	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
993D2: Gara, moderately eroded-----	45	Very limited Low strength Slope Shrink-swell	1.00 0.63 0.50	Somewhat limited Slope Cutbanks cave	0.63 0.10	Somewhat limited Slope	0.63
Armstrong, moderately eroded--	35	Very limited Shrink-swell Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.32	Very limited Depth to saturated zone Slope	1.00 0.63
993E2: Gara, moderately eroded-----	45	Very limited Slope Low strength Shrink-swell	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993E2: Armstrong, moderately eroded--	40	Very limited Shrink-swell Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.32	Very limited Depth to saturated zone Slope	1.00 1.00
993F2: Gara, moderately eroded-----	65	Very limited Slope Low strength Shrink-swell	1.00 1.00 0.50	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Armstrong, moderately eroded--	25	Very limited Shrink-swell Depth to saturated zone Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone Too clayey	1.00 1.00 0.32	Very limited Slope Depth to saturated zone	1.00 1.00
1160: Walford, terrace----	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
1220: Nodaway, frequently flooded, channeled	75	Very limited Frost action Flooding Low strength	1.00 1.00 1.00	Somewhat limited Flooding Depth to saturated zone Cutbanks cave	0.80 0.61 0.10	Very limited Flooding	1.00
1291: Atterberry, terrace	95	Very limited Depth to saturated zone Frost action Low strength	1.00 1.00 1.00	Very limited Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited Depth to saturated zone	1.00
1354: Aquests, ponded----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Cutbanks cave	0.10	Not limited	
Sparta-----	35	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.07

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442B: Pillot-----	20	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Cutbanks cave	 1.00	Not limited	
1442C: Tama-----	40	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
Sparta-----	35	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.07
Pillot-----	20	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
1442C2: Tama, moderately eroded-----	40	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave	 0.10	Not limited	
Sparta, moderately eroded-----	35	Not limited		Very limited Cutbanks cave	1.00	Somewhat limited Droughty	0.17
Pillot, moderately eroded-----	20	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Very limited Cutbanks cave	1.00	Not limited	
1442D2: Tama, moderately eroded-----	40	Very limited Frost action Low strength Slope	 1.00 1.00 0.63	Somewhat limited Slope Cutbanks cave	 0.63 0.10	Somewhat limited Slope	0.63
Sparta, moderately eroded-----	35	Somewhat limited Slope	 0.63	Very limited Cutbanks cave Slope	 1.00 0.63	Somewhat limited Slope Droughty	0.63 0.17
Pillot, moderately eroded-----	20	Very limited Frost action Low strength Slope	 1.00 1.00 0.63	Very limited Cutbanks cave Slope	 1.00 0.63	Somewhat limited Slope	0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442E2: Tama, moderately eroded-----	40	Very limited Frost action Low strength Slope	1.00 1.00 1.00	Very limited Slope Cutbanks cave	1.00 0.10	Very limited Slope	1.00
Sparta, moderately eroded-----	35	Very limited Slope	1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope Droughty	1.00 0.17
Pillot, moderately eroded-----	20	Very limited Frost action Slope Low strength	1.00 1.00 1.00	Very limited Cutbanks cave Slope	1.00 1.00	Very limited Slope	1.00
1540: Quiver, frequently flooded-----	40	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.80 0.10	Very limited Flooding Depth to saturated zone	1.00 1.00
Zook, frequently flooded-----	30	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.80 0.10	Very limited Flooding Depth to saturated zone	1.00 1.00
Klum, frequently flooded-----	15	Very limited Flooding Frost action	1.00 0.50	Somewhat limited Flooding Depth to saturated zone Cutbanks cave	0.80 0.61 0.10	Very limited Flooding	1.00
2219: Ella, rarely flooded	70	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
2219B: Ella, rarely flooded	75	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	
2219C2: Ella, moderately eroded-----	80	Very limited Frost action Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Depth to saturated zone Cutbanks cave	0.61 0.10	Not limited	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2422: Amana, occasionally flooded-----	50	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
Nodaway, occasionally flooded-----	30	Very limited Frost action Flooding Low strength	1.00 1.00 1.00	Somewhat limited Depth to saturated zone Flooding Cutbanks cave	0.61 0.60 0.10	Somewhat limited Flooding	0.60
Lawson, occasionally flooded-----	20	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00 0.60
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Very limited Frost action Flooding Low strength	1.00 1.00 1.00	Somewhat limited Flooding Depth to saturated zone Cutbanks cave	0.80 0.61 0.10	Very limited Flooding	1.00
6422: Amana, frequently flooded-----	90	Very limited Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	1.00 0.80 0.10	Very limited Flooding Depth to saturated zone	1.00 1.00
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Sanitary Facilities

The titles of the tables described in this section are:

- “Sewage Disposal”
- “Landfills”

These tables show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If

the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Sewage Disposal

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone Slow water movement	1.00 0.50	Very limited Depth to saturated zone Seepage Slope	1.00 0.50 0.32
Colo-----	35	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
7: Wiota, rarely flooded-----	100	Somewhat limited Slow water movement Flooding	0.50 0.40	Somewhat limited Seepage Flooding	0.50 0.40
7B: Wiota, rarely flooded-----	100	Somewhat limited Slow water movement Flooding	0.50 0.40	Somewhat limited Seepage Flooding Slope	0.50 0.40 0.32
8B: Judson-----	95	Somewhat limited Slow water movement	0.46	Somewhat limited Seepage Slope	0.53 0.32
24C2: Shelby, moderately eroded-----	85	Very limited Slow water movement	1.00	Very limited Slope	1.00
24D2: Shelby, moderately eroded-----	70	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
24D3: Shelby, severely eroded-----	90	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
24E2: Shelby, moderately eroded-----	85	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
24E3: Shelby, severely eroded-----	95	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
41: Sparta-----	100	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage	1.00
41B: Sparta-----	100	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.32
41C: Sparta-----	85	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 1.00
41D: Sparta-----	75	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone Slow water movement Flooding	1.00 1.00 0.40	Very limited Depth to saturated zone Seepage Flooding	1.00 0.50 0.40
51: Vesser, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
54: Zook, occasionally flooded-----	100	Very limited Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
54+: Zook, occasionally flooded, overwash--	100	Very limited Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
63C: Chelsea-----	90	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 1.00
63E: Chelsea-----	95	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
63G: Chelsea-----	95	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
65D2: Lindley, moderately eroded-----	85	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
65D3: Lindley, severely eroded-----	85	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
65E2: Lindley, moderately eroded-----	85	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
65E3: Lindley, severely eroded-----	85	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
65F: Lindley-----	100	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
65F2: Lindley, moderately eroded-----	80	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
65F3: Lindley, severely eroded-----	90	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
65G: Lindley-----	100	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
75: Givin-----	95	Very limited Depth to saturated zone Slow water movement	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 0.53
76B: Ladoga-----	95	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.53 0.32
76C: Ladoga-----	85	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
76C2: Ladoga, moderately eroded-----	95	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
76D: Ladoga-----	90	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
76D2: Ladoga, moderately eroded-----	90	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
76D3: Ladoga, severely eroded-----	85	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
76E2: Ladoga, moderately eroded-----	70	Very limited Slow water movement Slope Depth to saturated zone	1.00 1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
76E3: Ladoga, severely eroded-----	85	Very limited Slow water movement Slope Depth to saturated zone	1.00 1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
80B: Clinton-----	100	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.53 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
80C: Clinton-----	95	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
80C2: Clinton, moderately eroded-----	85	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone	1.00 0.71
80D: Clinton-----	90	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
80D2: Clinton, moderately eroded-----	85	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone	1.00 0.71
80D3: Clinton, severely eroded-----	75	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone	1.00 0.71
80E2: Clinton, moderately eroded-----	90	Very limited Slow water movement Slope Depth to saturated zone	1.00 1.00 0.99	Very limited Slope Depth to saturated zone	1.00 0.71
80E3: Clinton, severely eroded-----	70	Very limited Slow water movement Slope Depth to saturated zone	1.00 1.00 0.99	Very limited Slope Depth to saturated zone	1.00 0.71

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
80F2: Clinton, moderately eroded-----	90	Very limited Slope Slow water movement Depth to saturated zone	1.00 1.00 0.99	Very limited Slope Depth to saturated zone	1.00 0.71
83B: Kenyon-----	75	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.50 0.32
83C: Kenyon-----	80	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
83C2: Kenyon, moderately eroded-----	85	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
83D2: Kenyon, moderately eroded-----	80	Somewhat limited Depth to saturated zone Slope Slow water movement	0.99 0.63 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone Slow water movement Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Seepage Flooding	1.00 0.50 0.40
93D2: Shelby, moderately eroded-----	50	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
93D2: Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
93D3: Shelby, severely eroded-----	50	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
Adair, severely eroded-----	30	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
93E2: Shelby, moderately eroded-----	60	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
119: Muscatine-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.50	Very limited Depth to saturated zone Seepage	1.00 0.50
120B: Tama-----	95	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
120C: Tama-----	85	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
120C2: Tama, moderately eroded-----	75	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
120D2: Tama, moderately eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
120D3: Tama, severely eroded-----	80	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
120E2: Tama, moderately eroded-----	80	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
122: Sperry-----	95	Very limited Slow water movement Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Ponding Seepage	1.00 1.00 0.53
133: Colo, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
133+: Colo, occasionally flooded, overwash--	90	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
162B: Downs-----	95	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
162C: Downs-----	85	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
162C2: Downs, moderately eroded-----	85	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
162D2: Downs, moderately eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
162D3: Downs, severely eroded-----	80	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
162E2: Downs, moderately eroded-----	75	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
162E3: Downs, severely eroded-----	75	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163B: Fayette-----	95	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
163C: Fayette-----	90	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
163C2: Fayette, moderately eroded-----	85	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
163D: Fayette-----	85	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
163D2: Fayette, moderately eroded-----	65	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
163D3: Fayette, severely eroded-----	60	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
163E: Fayette-----	75	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163E2: Fayette, moderately eroded-----	70	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163E3: Fayette, severely eroded-----	70	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163F: Fayette-----	75	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163F2: Fayette, moderately eroded-----	70	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163F3: Fayette, severely eroded-----	70	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
163G: Fayette-----	85	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
165: Stronghurst-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.50	Very limited Depth to saturated zone Seepage	1.00 0.50
171C2: Bassett, moderately eroded-----	85	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
171D2: Bassett, moderately eroded-----	80	Somewhat limited Depth to saturated zone Slope Slow water movement	0.99 0.63 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
171D3: Bassett, severely eroded-----	75	Somewhat limited Depth to saturated zone Slope Slow water movement	0.99 0.63 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
171E2: Bassett, moderately eroded-----	80	Very limited Slope Depth to saturated zone Slow water movement	1.00 0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
171E3: Bassett, severely eroded-----	75	Very limited Slope Depth to saturated zone Slow water movement	1.00 0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
172: Wabash, occasionally flooded-----	100	Very limited Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
175: Dickinson-----	100	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00
175B: Dickinson-----	95	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 0.32
175C: Dickinson-----	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage Slope	1.00 1.00
178: Waukee-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
178B: Waukee-----	100	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 0.32
178C: Waukee-----	100	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
179D2: Gara, moderately eroded-----	80	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
179D3: Gara, severely eroded-----	70	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
179E2: Gara, moderately eroded-----	85	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
179E3: Gara, severely eroded-----	75	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
179F2: Gara, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
179F3: Gara, severely eroded-----	90	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
180: Keomah-----	95	Very limited Depth to saturated zone Slow water movement	1.00 1.00	Very limited Depth to saturated zone	1.00
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
220: Nodaway, occasionally flooded-----	85	Very limited Flooding Depth to saturated zone Slow water movement	1.00 0.99 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 0.71 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
279: Taintor-----	90	Very limited Depth to saturated zone Slow water movement	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 0.53
280: Mahaska-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage	1.00 0.53
281B: Otley-----	100	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
281C: Otley-----	90	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Slope Seepage	1.00 1.00 0.53
281C2: Otley, moderately eroded-----	85	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Slope Seepage	1.00 1.00 0.53
281D2: Otley, moderately eroded-----	80	Very limited Depth to saturated zone Slope Slow water movement	1.00 0.63 0.46	Very limited Slope Depth to saturated zone Seepage	1.00 1.00 0.53
281D3: Otley, severely eroded-----	80	Very limited Depth to saturated zone Slope Slow water movement	1.00 0.63 0.46	Very limited Slope Depth to saturated zone Seepage	1.00 1.00 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
281E2: Otley, moderately eroded-----	85	Very limited Depth to saturated zone Slope Slow water movement	1.00 1.00 0.46	Very limited Slope Depth to saturated zone Seepage	1.00 1.00 0.53
291: Atterberry-----	90	Very limited Depth to saturated zone Slow water movement	1.00 0.50	Very limited Depth to saturated zone Seepage	1.00 0.50
293C: Fayette-----	45	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
Chelsea-----	35	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 1.00
Tell-----	20	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
293D: Fayette-----	45	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
Chelsea-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
Tell-----	20	Very limited Seepage, bottom layer Slope Slow water movement	1.00 0.63 0.50	Very limited Slope Seepage	1.00 1.00
293D2: Fayette, moderately eroded-----	45	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
293D2: Chelsea, moderately eroded-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
Tell, moderately eroded-----	20	Very limited Seepage, bottom layer Slope Slow water movement	1.00 0.63 0.50	Very limited Slope Seepage	1.00 1.00
293E: Fayette-----	40	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
Chelsea-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tell-----	25	Very limited Seepage, bottom layer Slope Slow water movement	1.00 1.00 0.50	Very limited Slope Seepage	1.00 1.00
293E2: Fayette, moderately eroded-----	40	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
Chelsea, moderately eroded-----	35	Very limited Filtering capacity Seepage, bottom layer Slope	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tell, moderately eroded-----	25	Very limited Seepage, bottom layer Slope Slow water movement	1.00 1.00 0.50	Very limited Slope Seepage	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
293G: Fayette-----	40	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
Chelsea-----	35	Very limited Filtering capacity Slope Seepage, bottom layer	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Tell-----	25	Very limited Slope Seepage, bottom layer Slow water movement	1.00 1.00 0.50	Very limited Slope Seepage	1.00 1.00
353B: Tell-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 0.32
353C: Tell-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
353C2: Tell, moderately eroded-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
353D2: Tell, moderately eroded-----	90	Very limited Seepage, bottom layer Slope Slow water movement	1.00 0.63 0.50	Very limited Slope Seepage	1.00 1.00
377B: Dinsdale-----	100	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.50 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
377C: Dinsdale-----	85	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
420: Tama, terrace-----	100	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
420B: Tama, terrace-----	100	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
422: Amana, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
424D2: Lindley, moderately eroded-----	50	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
Keswick, moderately eroded-----	35	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
424E2: Lindley, moderately eroded-----	45	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
Keswick, moderately eroded-----	40	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
424E3: Lindley, severely eroded-----	45	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
Keswick, severely eroded-----	40	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
424F2: Lindley, moderately eroded-----	65	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
Keswick, moderately eroded-----	25	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
425D2: Keswick, moderately eroded-----	90	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Slow water movement Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
428B: Ely-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
430: Ackmore, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.50
450: Pillot-----	100	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
450B: Pillot-----	90	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 0.32
450C: Pillot-----	85	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
453: Tuskeego, rarely flooded-----	75	Very limited Slow water movement Depth to saturated zone Flooding	1.00 1.00 0.40	Very limited Depth to saturated zone Seepage Flooding	1.00 0.50 0.40
462B: Downs, terrace-----	90	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
463B: Fayette, terrace----	100	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
463C2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
463D2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
463D3: Fayette, severely eroded, terrace----	80	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
484: Lawson, occasionally flooded-----	80	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.50
587: Chequest, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
587+: Chequest, occasionally flooded, overwash--	95	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
626: Hayfield-----	90	Very limited Depth to saturated zone Seepage, bottom layer Slow water movement	1.00 1.00 0.50	Very limited Seepage Depth to saturated zone	1.00 1.00
663D2: Seaton, moderately eroded-----	85	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
663E2: Seaton, moderately eroded-----	85	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
663E3: Seaton, severely eroded-----	80	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
663F2: Seaton, moderately eroded-----	80	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
687: Watkins, rarely flooded-----	90	Somewhat limited Slow water movement Flooding	0.50 0.40	Somewhat limited Seepage Flooding	0.50 0.40
687B: Watkins, rarely flooded-----	100	Somewhat limited Slow water movement Flooding	0.50 0.40	Somewhat limited Seepage Flooding Slope	0.50 0.40 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone Slow water movement Flooding	1.00 0.46 0.40	Very limited Depth to saturated zone Seepage Flooding	1.00 0.53 0.40
771B: Waubeek-----	90	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.50 0.32
771C2: Waubeek, moderately eroded-----	90	Somewhat limited Depth to saturated zone Slow water movement	0.99 0.50	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.50
792D2: Armstrong, moderately eroded--	75	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
876B: Ladoga, terrace----	90	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Somewhat limited Depth to saturated zone Seepage Slope	0.71 0.53 0.08
876C: Ladoga, terrace----	80	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
876C2: Ladoga, moderately eroded, terrace----	85	Very limited Slow water movement Depth to saturated zone	1.00 0.99	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
876D2: Ladoga, moderately eroded, terrace----	90	Very limited Slow water movement Depth to saturated zone Slope	1.00 0.99 0.63	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
881B: Otley, terrace-----	95	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.08
911B: Colo-----	55	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
Ely-----	35	Very limited Depth to saturated zone Slow water movement	1.00 0.46	Very limited Depth to saturated zone Seepage Slope	1.00 0.53 0.32
993D2: Gara, moderately eroded-----	45	Very limited Slow water movement Slope	1.00 0.63	Very limited Slope	1.00
Armstrong, moderately eroded--	35	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 0.63	Very limited Slope Depth to saturated zone	1.00 1.00
993E2: Gara, moderately eroded-----	45	Very limited Slow water movement Slope	1.00 1.00	Very limited Slope	1.00
Armstrong, moderately eroded--	40	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
993F2: Gara, moderately eroded-----	65	Very limited Slope Slow water movement	1.00 1.00	Very limited Slope	1.00
Armstrong, moderately eroded--	25	Very limited Slow water movement Depth to saturated zone Slope	1.00 1.00 1.00	Very limited Slope Depth to saturated zone	1.00 1.00
1160: Walford, terrace----	95	Very limited Depth to saturated zone Slow water movement	1.00 1.00	Very limited Depth to saturated zone Seepage	1.00 0.50
1220: Nodaway, frequently flooded, channeled	75	Very limited Flooding Depth to saturated zone Slow water movement	1.00 0.99 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 0.71 0.50
1291: Atterberry, terrace	95	Very limited Depth to saturated zone Slow water movement	1.00 0.50	Very limited Depth to saturated zone Seepage	1.00 0.50
1354: Aquents, ponded-----	100	Not rated		Not rated	
1442B: Tama-----	40	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.32
Sparta-----	35	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 0.32
Pillot-----	20	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1442C:					
Tama-----	40	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
Sparta-----	35	Very limited Filtering capacity Seepage, bottom layer	1.00 1.00	Very limited Seepage Slope	1.00 1.00
Pillot-----	20	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
1442C2:					
Tama, moderately eroded-----	40	Somewhat limited Slow water movement	0.50	Very limited Slope Seepage	1.00 0.50
Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Filtering capacity	1.00 1.00	Very limited Seepage Slope	1.00 1.00
Pillot, moderately eroded-----	20	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 1.00
1442D2:					
Tama, moderately eroded-----	40	Somewhat limited Slope Slow water movement	0.63 0.50	Very limited Slope Seepage	1.00 0.50
Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Filtering capacity Slope	1.00 1.00 0.63	Very limited Slope Seepage	1.00 1.00
Pillot, moderately eroded-----	20	Very limited Seepage, bottom layer Slope Slow water movement	1.00 0.63 0.50	Very limited Slope Seepage	1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1442E2: Tama, moderately eroded-----	40	Very limited Slope Slow water movement	1.00 0.50	Very limited Slope Seepage	1.00 0.50
Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Slope Filtering capacity	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00
Pillot, moderately eroded-----	20	Very limited Slope Seepage, bottom layer Slow water movement	1.00 1.00 0.50	Very limited Slope Seepage	1.00 1.00
1540: Quiver, frequently flooded-----	40	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
Zook, frequently flooded-----	30	Very limited Flooding Slow water movement Depth to saturated zone	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00
Klum, frequently flooded-----	15	Very limited Flooding Seepage, bottom layer Depth to saturated zone	1.00 1.00 0.99	Very limited Flooding Seepage Depth to saturated zone	1.00 1.00 0.71
2219: Ella, rarely flooded	70	Somewhat limited Depth to saturated zone Slow water movement Flooding	0.99 0.50 0.40	Somewhat limited Depth to saturated zone Seepage Flooding	0.71 0.53 0.40

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
2219B: Ella, rarely flooded	75	Somewhat limited Depth to saturated zone Slow water movement Flooding	0.99 0.50 0.40	Somewhat limited Depth to saturated zone Seepage Flooding	0.71 0.53 0.40
2219C2: Ella, moderately eroded-----	80	Somewhat limited Depth to saturated zone Slow water movement Flooding	0.99 0.50 0.40	Very limited Slope Depth to saturated zone Seepage	1.00 0.71 0.53
2422: Amana, occasionally flooded-----	50	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.53
Nodaway, occasionally flooded-----	30	Very limited Flooding Depth to saturated zone Slow water movement	1.00 0.99 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 0.71 0.50
Lawson, occasionally flooded-----	20	Very limited Flooding Depth to saturated zone Slow water movement	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 0.50
4946: Udorthents-----	65	Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated	

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
6220: Nodaway, frequently flooded-----	85	Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.50	Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.50
6422: Amana, frequently flooded-----	90	Very limited Flooding Depth to saturated zone Slow water movement	 1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	 1.00 1.00 0.53
AW: Animal waste lagoon	100	Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated	
W: Water-----	100	Not rated		Not rated	

Landfills

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
Colo-----	35	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
7: Wiota, rarely flooded-----	100	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
7B: Wiota, rarely flooded-----	100	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
8B: Judson-----	95	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
24C2: Shelby, moderately eroded-----	85	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
24D2: Shelby, moderately eroded-----	70	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
24D3: Shelby, severely eroded-----	90	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
24E2: Shelby, moderately eroded-----	85	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E3: Shelby, severely eroded-----	95	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
41: Sparta-----	100	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
41B: Sparta-----	100	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
41C: Sparta-----	85	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
41D: Sparta-----	75	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
43: Bremer, rarely flooded-----	100	Very limited Depth to saturated zone Too clayey Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50
51: Vesser, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
54: Zook, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
54+: Zook, occasionally flooded, overwash--	100	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
63C: Chelsea-----	90	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
63E: Chelsea-----	95	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
63G: Chelsea-----	95	Very limited Slope Seepage, bottom layer Too sandy	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00	Very limited Slope Too sandy Seepage	1.00 1.00 1.00
65D2: Lindley, moderately eroded-----	85	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
65D3: Lindley, severely eroded-----	85	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
65E2: Lindley, moderately eroded-----	85	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
65E3: Lindley, severely eroded-----	85	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
65F: Lindley-----	100	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65F2: Lindley, moderately eroded-----	80	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
65F3: Lindley, severely eroded-----	90	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
65G: Lindley-----	100	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
75: Givin-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
76B: Ladoga-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
76C: Ladoga-----	85	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
76C2: Ladoga, moderately eroded-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
76D: Ladoga-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50
76D2: Ladoga, moderately eroded-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76D3: Ladoga, severely eroded-----	85	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50
76E2: Ladoga, moderately eroded-----	70	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Too clayey	1.00 0.50
76E3: Ladoga, severely eroded-----	85	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Too clayey	1.00 0.50
80B: Clinton-----	100	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
80C: Clinton-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
80C2: Clinton, moderately eroded-----	85	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
80D: Clinton-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50
80D2: Clinton, moderately eroded-----	85	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80D3: Clinton, severely eroded-----	75	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50
80E2: Clinton, moderately eroded-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Too clayey	1.00 0.50
80E3: Clinton, severely eroded-----	70	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Too clayey	1.00 0.50
80F2: Clinton, moderately eroded-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Slope Depth to saturated zone	1.00 1.00	Very limited Slope Too clayey	1.00 0.50
83B: Kenyon-----	75	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	
83C: Kenyon-----	80	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	
83C2: Kenyon, moderately eroded-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	
83D2: Kenyon, moderately eroded-----	80	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope	0.63

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
88: Nevin, rarely flooded-----	90	Very limited Depth to saturated zone Too clayey Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Too clayey	1.00 0.50
93D2: Shelby, moderately eroded-----	50	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
93D3: Shelby, severely eroded-----	50	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
Adair, severely eroded-----	30	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
93E2: Shelby, moderately eroded-----	60	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Adair, moderately eroded-----	35	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50
119: Muscatine-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
120B: Tama-----	95	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120C: Tama-----	85	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
120C2: Tama, moderately eroded-----	75	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
120D2: Tama, moderately eroded-----	85	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
120D3: Tama, severely eroded-----	80	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
120E2: Tama, moderately eroded-----	80	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
122: Sperry-----	95	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Ponding	1.00 1.00	Very limited Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50
133: Colo, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
133+: Colo, occasionally flooded, overwash--	90	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
162B: Downs-----	95	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
162C: Downs-----	85	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162C2: Downs, moderately eroded-----	85	Not limited		Not limited		Not limited	
162D2: Downs, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
162D3: Downs, severely eroded-----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
162E2: Downs, moderately eroded-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
162E3: Downs, severely eroded-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163B: Fayette-----	95	Not limited		Not limited		Not limited	
163C: Fayette-----	90	Not limited		Not limited		Not limited	
163C2: Fayette, moderately eroded-----	85	Not limited		Not limited		Not limited	
163D: Fayette-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
163D2: Fayette, moderately eroded-----	65	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
163D3: Fayette, severely eroded-----	60	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
163E: Fayette-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163E2: Fayette, moderately eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163E3: Fayette, severely eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F: Fayette-----	75	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F2: Fayette, moderately eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163F3: Fayette, severely eroded-----	70	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
163G: Fayette-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
165: Stronghurst-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
171C2: Bassett, moderately eroded-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	
171D2: Bassett, moderately eroded-----	80	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope	0.63
171D3: Bassett, severely eroded-----	75	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope	0.63
171E2: Bassett, moderately eroded-----	80	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope	1.00

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171E3: Bassett, severely eroded-----	75	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope	1.00
172: Wabash, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey Hard to compact	1.00 1.00 1.00
175: Dickinson-----	100	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
175B: Dickinson-----	95	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
175C: Dickinson-----	85	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
178: Waukeee-----	90	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
178B: Waukeee-----	100	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
178C: Waukeee-----	100	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
179D2: Gara, moderately eroded-----	80	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179D3: Gara, severely eroded-----	70	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50
179E2: Gara, moderately eroded-----	85	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
179E3: Gara, severely eroded-----	75	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
179F2: Gara, moderately eroded-----	85	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
179F3: Gara, severely eroded-----	90	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
180: Keomah-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50
192D2: Adair, moderately eroded-----	75	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
192D3: Adair, severely eroded-----	70	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
220: Nodaway, occasionally flooded-----	85	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Somewhat limited Too clayey	0.50
279: Taintor-----	90	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
280: Mahaska-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50
281B: Otley-----	100	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone Too clayey	0.86 0.50
281C: Otley-----	90	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone Too clayey	0.86 0.50
281C2: Otley, moderately eroded-----	85	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone Too clayey	0.86 0.50
281D2: Otley, moderately eroded-----	80	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Depth to saturated zone Slope Too clayey	0.86 0.63 0.50
281D3: Otley, severely eroded-----	80	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Depth to saturated zone Slope Too clayey	0.86 0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281E2: Otley, moderately eroded-----	85	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Slope Depth to saturated zone Too clayey	1.00 0.86 0.50
291: Atterberry-----	90	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50
293C: Fayette-----	45	Not limited		Not limited		Not limited	
Chelsea-----	35	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
Tell-----	20	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
293D: Fayette-----	45	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
Chelsea-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
Tell-----	20	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
293D2: Fayette, moderately eroded-----	45	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
Chelsea, moderately eroded-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D2: Tell, moderately eroded-----	20	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
293E: Fayette-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
Tell-----	25	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
293E2: Fayette, moderately eroded-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea, moderately eroded-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
Tell, moderately eroded-----	25	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
293G: Fayette-----	40	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
Chelsea-----	35	Very limited Slope Seepage, bottom layer Too sandy	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00	Very limited Slope Too sandy Seepage	1.00 1.00 1.00
Tell-----	25	Very limited Slope Seepage, bottom layer Too sandy	1.00 1.00 1.00	Very limited Slope Seepage	1.00 1.00	Very limited Slope Too sandy Seepage	1.00 1.00 1.00

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
353B: Tell-----	85	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
353C: Tell-----	90	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
353C2: Tell, moderately eroded-----	90	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
353D2: Tell, moderately eroded-----	90	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
377B: Dinsdale-----	100	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
377C: Dinsdale-----	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
420: Tama, terrace-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
420B: Tama, terrace-----	100	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
422: Amana, occasionally flooded-----	90	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
424D2: Lindley, moderately eroded-----	50	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424D2: Keswick, moderately eroded-----	35	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
424E2: Lindley, moderately eroded-----	45	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Keswick, moderately eroded-----	40	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50
424E3: Lindley, severely eroded-----	45	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Keswick, severely eroded-----	40	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50
424F2: Lindley, moderately eroded-----	65	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Keswick, moderately eroded-----	25	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Slope Depth to saturated zone	1.00 1.00	Very limited Slope Depth to saturated zone Too clayey	1.00 1.00 0.50
425D2: Keswick, moderately eroded-----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
425D3: Keswick, severely eroded-----	60	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
428B: Ely-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
430: Ackmore, occasionally flooded-----	100	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
450: Pillot-----	100	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
450B: Pillot-----	90	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
450C: Pillot-----	85	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
453: Tuskeego, rarely flooded-----	75	Very limited Depth to saturated zone Too clayey Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Too clayey	1.00 0.50
462B: Downs, terrace-----	90	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
463B: Fayette, terrace----	100	Not limited		Not limited		Not limited	

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463C2: Fayette, moderately eroded, terrace----	90	Not limited		Not limited		Not limited	
463D2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
463D3: Fayette, severely eroded, terrace----	80	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
484: Lawson, occasionally flooded-----	80	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
587: Chequest, occasionally flooded-----	95	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
587+: Chequest, occasionally flooded, overwash--	95	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
626: Hayfield-----	90	Very limited Depth to saturated zone Seepage, bottom layer Too sandy	1.00 1.00 0.50	Very limited Depth to saturated zone Seepage	1.00 1.00	Very limited Depth to saturated zone Seepage Too sandy	1.00 1.00 0.50
663D2: Seaton, moderately eroded-----	85	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63
663E2: Seaton, moderately eroded-----	85	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663E3: Seaton, severely eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
687: Watkins, rarely flooded-----	90	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
687B: Watkins, rarely flooded-----	100	Somewhat limited Too clayey Flooding	0.50 0.40	Somewhat limited Flooding	0.40	Somewhat limited Too clayey	0.50
688: Koszta, rarely flooded-----	95	Very limited Depth to saturated zone Too clayey Flooding	1.00 0.50 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Too clayey	1.00 0.50
771B: Waubee-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
771C2: Waubee, moderately eroded-----	90	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
792D2: Armstrong, moderately eroded--	75	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
876B: Ladoga, terrace----	90	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
876C: Ladoga, terrace----	80	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
876C2: Ladoga, moderately eroded, terrace----	85	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Too clayey	0.50
876D2: Ladoga, moderately eroded, terrace----	90	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Somewhat limited Slope Too clayey	0.63 0.50
881B: Otley, terrace-----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone Too clayey	0.86 0.50
911B: Colo-----	55	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
Ely-----	35	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
993D2: Gara, moderately eroded-----	45	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993D2: Armstrong, moderately eroded--	35	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50	Very limited Depth to saturated zone Slope	1.00 0.63	Very limited Depth to saturated zone Slope Too clayey	1.00 0.63 0.50
993E2: Gara, moderately eroded-----	45	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Armstrong, moderately eroded--	40	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Depth to saturated zone Slope	1.00 1.00	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50
993F2: Gara, moderately eroded-----	65	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Armstrong, moderately eroded--	25	Very limited Depth to saturated zone Slope Too clayey	1.00 1.00 0.50	Very limited Slope Depth to saturated zone	1.00 1.00	Very limited Slope Depth to saturated zone Too clayey	1.00 1.00 0.50
1160: Walford, terrace----	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
1220: Nodaway, frequently flooded, channeled	75	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Somewhat limited Too clayey	0.50
1291: Atterberry, terrace	95	Very limited Depth to saturated zone Too clayey	1.00 0.50	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Hard to compact Too clayey	1.00 1.00 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1354: Aquents, ponded-----	100	Not rated		Very limited Flooding Depth to saturated zone Ponding	1.00 1.00 1.00	Not rated	
1442B: Tama-----	40	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Sparta-----	35	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
Pillot-----	20	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
1442C: Tama-----	40	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Sparta-----	35	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
Pillot-----	20	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
1442C2: Tama, moderately eroded-----	40	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Too sandy	1.00 1.00	Very limited Seepage	1.00	Very limited Too sandy Seepage	1.00 1.00
Pillot, moderately eroded-----	20	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Very limited Seepage Too sandy	1.00 0.50
1442D2: Tama, moderately eroded-----	40	Somewhat limited Slope Too clayey	0.63 0.50	Somewhat limited Slope	0.63	Somewhat limited Slope Too clayey	0.63 0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442D2: Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 0.63	Very limited Seepage Slope	1.00 0.63	Very limited Too sandy Seepage Slope	1.00 1.00 0.63
Pillot, moderately eroded-----	20	Very limited Seepage, bottom layer Slope Too sandy	1.00 0.63 0.50	Very limited Seepage Slope	1.00 0.63	Very limited Seepage Slope Too sandy	1.00 0.63 0.50
1442E2: Tama, moderately eroded-----	40	Very limited Slope Too clayey	1.00 0.50	Very limited Slope	1.00	Very limited Slope Too clayey	1.00 0.50
Sparta, moderately eroded-----	35	Very limited Seepage, bottom layer Too sandy Slope	1.00 1.00 1.00	Very limited Seepage Slope	1.00 1.00	Very limited Too sandy Seepage Slope	1.00 1.00 1.00
Pillot, moderately eroded-----	20	Very limited Slope Seepage, bottom layer Too sandy	1.00 1.00 0.50	Very limited Slope Seepage	1.00 1.00	Very limited Slope Seepage Too sandy	1.00 1.00 0.50
1540: Quiver, frequently flooded-----	40	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
Zook, frequently flooded-----	30	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
Klum, frequently flooded-----	15	Very limited Flooding Depth to saturated zone Seepage, bottom layer	1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Somewhat limited Seepage	0.52

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2219: Ella, rarely flooded	70	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Not limited	
2219B: Ella, rarely flooded	75	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Not limited	
2219C2: Ella, moderately eroded-----	80	Very limited Depth to saturated zone Flooding	1.00 0.40	Very limited Depth to saturated zone Flooding	1.00 0.40	Not limited	
2422: Amana, occasionally flooded-----	50	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
Nodaway, occasionally flooded-----	30	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Somewhat limited Too clayey	0.50
Lawson, occasionally flooded-----	20	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone	1.00
4946: Udorthents-----	65	Not rated		Not limited		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Very limited Flooding Depth to saturated zone Too clayey	1.00 1.00 0.50	Very limited Flooding Depth to saturated zone	1.00 1.00	Somewhat limited Too clayey	0.50

Landfills--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6422: Amana, frequently flooded-----	90	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Depth to saturated zone Too clayey	1.00 0.50
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Construction Materials

The titles of the tables described in this section are:

- “Source of Sand and Gravel”
- “Source of Reclamation Material, Roadfill, and Topsoil”

These tables give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table “Source of Sand and Gravel,” only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated as *improbable*, *possible*, *probable*, or *very likely* sources of gravel. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of gravel. The number 0.00 indicates an improbable source; 0.01 to 0.39, a possible source; 0.40 to 0.99, a probable source; and 1.00, a very likely source.

The soils are rated *good*, *fair*, or *poor* as potential sources of sand. A rating of good or fair means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. The larger the number, the greater the likelihood that the layer is a source of sand.

In the table “Source of Reclamation Material, Roadfill, and Topsoil,” the rating class terms are *good*, *fair*, and *poor*. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation

is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Source of Sand and Gravel

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
5B:					
Ackmore-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Colo-----	35	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
7:					
Wiota, rarely flooded-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
7B:					
Wiota, rarely flooded-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
8B:					
Judson-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
24C2:					
Shelby, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
24D2:					
Shelby, moderately eroded-----	70	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
24D3:					
Shelby, severely eroded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
24E2:					
Shelby, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
24E3: Shelby, severely eroded-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
41: Sparta-----	100	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
41B: Sparta-----	100	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
41C: Sparta-----	85	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
41D: Sparta-----	75	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
43: Bremer, rarely flooded-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
51: Vesser, occasionally flooded-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
54: Zook, occasionally flooded-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
54+: Zook, occasionally flooded, overwash--	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
63C: Chelsea-----	90	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
63E: Chelsea-----	95	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
63G: Chelsea-----	95	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
65D2: Lindley, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65D3: Lindley, severely eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65E2: Lindley, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65E3: Lindley, severely eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65F: Lindley-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65F2: Lindley, moderately eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65F3: Lindley, severely eroded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
65G: Lindley-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
75: Givin-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76B: Ladoga-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
76C: Ladoga-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76C2: Ladoga, moderately eroded-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76D: Ladoga-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76D2: Ladoga, moderately eroded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76D3: Ladoga, severely eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76E2: Ladoga, moderately eroded-----	70	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
76E3: Ladoga, severely eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
80B: Clinton-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
80C: Clinton-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
80C2: Clinton, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
80D: Clinton-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
80D2: Clinton, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
80D3: Clinton, severely eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
80E2: Clinton, moderately eroded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
80E3: Clinton, severely eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
80F2: Clinton, moderately eroded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
83B: Kenyon-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
83C: Kenyon-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
83C2: Kenyon, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
83D2: Kenyon, moderately eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
88: Nevin, rarely flooded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
93D2: Shelby, moderately eroded-----	50	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Adair, moderately eroded-----	35	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
93D3: Shelby, severely eroded-----	50	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Adair, severely eroded-----	30	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
93E2: Shelby, moderately eroded-----	60	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Adair, moderately eroded-----	35	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
119: Muscatine-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
120B: Tama-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
120C: Tama-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
120C2: Tama, moderately eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
120D2: Tama, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
120D3: Tama, severely eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
120E2: Tama, moderately eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
122: Sperry-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
133: Colo, occasionally flooded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
133+: Colo, occasionally flooded, overwash--	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
162B: Downs-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
162C: Downs-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
162C2: Downs, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
162D2: Downs, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
162D3: Downs, severely eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
162E2: Downs, moderately eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
162E3: Downs, severely eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163B: Fayette-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163C: Fayette-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163C2: Fayette, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163D: Fayette-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163D2: Fayette, moderately eroded-----	65	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163D3: Fayette, severely eroded-----	60	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163E: Fayette-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163E2: Fayette, moderately eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
163E3: Fayette, severely eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163F: Fayette-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163F2: Fayette, moderately eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163F3: Fayette, severely eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
163G: Fayette-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
165: Stronghurst-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
171C2: Bassett, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
171D2: Bassett, moderately eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
171D3: Bassett, severely eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
171E2: Bassett, moderately eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
171E3: Bassett, severely eroded-----	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
172: Wabash, occasionally flooded-----	100	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
175: Dickinson-----	100	Improbable Thickest layer Bottom layer	 0.00 0.00	Fair Thickest layer Bottom layer	 0.00 0.36
175B: Dickinson-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Fair Thickest layer Bottom layer	 0.00 0.36
175C: Dickinson-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Fair Thickest layer Bottom layer	 0.00 0.36
178: Waukee-----	90	Possible Thickest layer Bottom layer	 0.00 0.04	Fair Thickest layer Bottom layer	 0.00 0.20
178B: Waukee-----	100	Possible Thickest layer Bottom layer	 0.00 0.04	Fair Thickest layer Bottom layer	 0.00 0.20
178C: Waukee-----	100	Possible Thickest layer Bottom layer	 0.00 0.04	Fair Thickest layer Bottom layer	 0.00 0.20
179D2: Gara, moderately eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
179D3: Gara, severely eroded-----	70	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
179E2: Gara, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
179E3: Gara, severely eroded-----	75	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
179F2: Gara, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
179F3: Gara, severely eroded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
180: Keomah-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
192D2: Adair, moderately eroded-----	75	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
192D3: Adair, severely eroded-----	70	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
220: Nodaway, occasionally flooded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
279: Taintor-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
280: Mahaska-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
281B: Otley-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
281C: Otley-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
281C2: Otley, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
281D2: Otley, moderately eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
281D3: Otley, severely eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
281E2: Otley, moderately eroded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
291: Atterberry-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
293C: Fayette-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
293D: Fayette-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
293D2:					
Fayette, moderately eroded-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea, moderately eroded-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell, moderately eroded-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
293E:					
Fayette-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell-----	25	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
293E2:					
Fayette, moderately eroded-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea, moderately eroded-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell, moderately eroded-----	25	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
293G:					
Fayette-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Chelsea-----	35	Improbable		Fair	
		Thickest layer	0.00	Bottom layer	0.12
		Bottom layer	0.00	Thickest layer	0.12
Tell-----	25	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
353B: Tell-----	85	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
353C: Tell-----	90	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
353C2: Tell, moderately eroded-----	90	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
353D2: Tell, moderately eroded-----	90	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.64
377B: Dinsdale-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
377C: Dinsdale-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
420: Tama, terrace-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
420B: Tama, terrace-----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
422: Amana, occasionally flooded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
424D2: Lindley, moderately eroded-----	50	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Keswick, moderately eroded-----	35	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
424E2: Lindley, moderately eroded-----	45	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Keswick, moderately eroded-----	40	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
424E3: Lindley, severely eroded-----	45	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Keswick, severely eroded-----	40	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
424F2: Lindley, moderately eroded-----	65	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
Keswick, moderately eroded-----	25	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
425D2: Keswick, moderately eroded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
425D3: Keswick, severely eroded-----	60	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
428B: Ely-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
430: Ackmore, occasionally flooded-----	100	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
450: Pillot-----	100	Improbable Thickest layer Bottom layer	 0.00 0.00	Fair Thickest layer Bottom layer	 0.00 0.10

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
450B: Pillot-----	90	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
450C: Pillot-----	85	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
453: Tuskeego, rarely flooded-----	75	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
462B: Downs, terrace-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463B: Fayette, terrace----	100	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463C2: Fayette, moderately eroded, terrace----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463D2: Fayette, moderately eroded, terrace----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463D3: Fayette, severely eroded, terrace----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463E2: Fayette, moderately eroded, terrace----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
463E3: Fayette, severely eroded, terrace----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
463F2: Fayette, moderately eroded, terrace----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
463F3: Fayette, severely eroded, terrace----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
484: Lawson, occasionally flooded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
587: Chequest, occasionally flooded-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
587+: Chequest, occasionally flooded, overwash--	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
626: Hayfield-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Fair Thickest layer Bottom layer	 0.00 0.10
663D2: Seaton, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
663E2: Seaton, moderately eroded-----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
663E3: Seaton, severely eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
663F2: Seaton, moderately eroded-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
687: Watkins, rarely flooded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
687B: Watkins, rarely flooded-----	100	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
688: Koszta, rarely flooded-----	95	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
771B: Waubeek-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
771C2: Waubeek, moderately eroded-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
792D2: Armstrong, moderately eroded--	75	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
876B: Ladoga, terrace-----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
876C: Ladoga, terrace-----	80	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
876C2: Ladoga, moderately eroded, terrace----	85	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00
876D2: Ladoga, moderately eroded, terrace----	90	Improbable Thickest layer Bottom layer	 0.00 0.00	Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
881B: Otley, terrace-----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
911B: Colo-----	55	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Ely-----	35	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
993D2: Gara, moderately eroded-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Armstrong, moderately eroded--	35	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
993E2: Gara, moderately eroded-----	45	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Armstrong, moderately eroded--	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
993F2: Gara, moderately eroded-----	65	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Armstrong, moderately eroded--	25	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
1160: Walford, terrace----	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
1220: Nodaway, frequently flooded, channeled	75	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
1291: Atterberry, terrace	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
1354: Aqueuts, ponded-----	100	Not rated		Not rated	
1442B: Tama-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Sparta-----	35	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
Pillot-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
1442C: Tama-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Sparta-----	35	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.27
		Bottom layer	0.00	Bottom layer	0.35
Pillot-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
1442C2: Tama, moderately eroded-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Sparta, moderately eroded-----	35	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.18
		Bottom layer	0.00	Bottom layer	0.34
Pillot, moderately eroded-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
1442D2: Tama, moderately eroded-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
1442D2: Sparta, moderately eroded-----	35	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.18
		Bottom layer	0.00	Bottom layer	0.34
Pillot, moderately eroded-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
1442E2: Tama, moderately eroded-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Sparta, moderately eroded-----	35	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.18
		Bottom layer	0.00	Bottom layer	0.34
Pillot, moderately eroded-----	20	Improbable		Fair	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.10
1540: Quiver, frequently flooded-----	40	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Zook, frequently flooded-----	30	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Klum, frequently flooded-----	15	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
2219: Ella, rarely flooded	70	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
2219B: Ella, rarely flooded	75	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
2219C2: Ella, moderately eroded-----	80	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of gravel		Potential as source of sand	
		Rating class	Value	Rating class	Value
2422:					
Amana, occasionally flooded-----	50	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Nodaway, occasionally flooded-----	30	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Lawson, occasionally flooded-----	20	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
4946:					
Udorthents-----	65	Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated	
5010:					
Pits, sand and gravel-----	100	Not rated		Not rated	
5040:					
Udorthents-----	100	Not rated		Not rated	
6220:					
Nodaway, frequently flooded-----	85	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
6422:					
Amana, frequently flooded-----	90	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
AW:					
Animal waste lagoon	100	Not rated		Not rated	
SL:					
Sewage lagoon-----	100	Not rated		Not rated	
W:					
Water-----	100	Not rated		Not rated	

Source of Reclamation Material, Roadfill, and Topsoil

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Good		Poor Wetness Low strength Shrink-swell	0.00 0.00 0.33	Poor Wetness	0.00
Colo-----	35	Fair Too clayey	0.88	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.89	Poor Wetness Too clayey	0.00 0.88
7: Wiota, rarely flooded-----	100	Fair Too clayey Too acid Water erosion	0.82 0.84 0.90	Poor Low strength Shrink-swell	0.00 0.97	Fair Too clayey	0.81
7B: Wiota, rarely flooded-----	100	Fair Too clayey Too acid Water erosion	0.82 0.84 0.90	Poor Low strength Shrink-swell	0.00 0.97	Fair Too clayey	0.81
8B: Judson-----	95	Fair Water erosion	0.90	Poor Low strength Shrink-swell	0.00 0.87	Good	
24C2: Shelby, moderately eroded-----	85	Fair Organic matter content Too clayey Too acid	0.50 0.88 0.97	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.57
24D2: Shelby, moderately eroded-----	70	Fair Organic matter content Too clayey Too acid	0.50 0.88 0.97	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.57
24D3: Shelby, severely eroded-----	90	Fair Organic matter content Too clayey Too acid	0.12 0.88 0.97	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.57

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E2: Shelby, moderately eroded-----	85	Fair Organic matter content Too clayey Too acid	 0.50 0.88 0.97	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope Too clayey	 0.00 0.57
24E3: Shelby, severely eroded-----	95	Fair Organic matter content Too clayey Too acid	 0.12 0.88 0.97	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope Too clayey	 0.00 0.57
41: Sparta-----	100	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy	 0.00
41B: Sparta-----	100	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy	 0.00
41C: Sparta-----	85	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy	 0.00
41D: Sparta-----	75	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy Slope	 0.00 0.37
43: Bremer, rarely flooded-----	100	Fair Too clayey Water erosion Too acid	 0.05 0.90 0.95	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.23	Poor Wetness Too clayey	 0.00 0.04
51: Vesser, occasionally flooded-----	95	Fair Organic matter content Too acid Water erosion	 0.50 0.74 0.90	Poor Wetness Low strength	 0.00 0.00	Poor Wetness	 0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
54: Zook, occasionally flooded-----	100	Fair Too clayey Water erosion	 0.12 0.99	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.12	Poor Wetness Too clayey	 0.00 0.12
54+: Zook, occasionally flooded, overwash--	100	Fair Too clayey Water erosion	 0.12 0.99	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.22	Poor Wetness Too clayey	 0.00 0.12
63C: Chelsea-----	90	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy	 0.00
63E: Chelsea-----	95	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Fair Slope	 0.98	Poor Too sandy Slope	 0.00 0.00
63G: Chelsea-----	95	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Poor Slope	 0.00	Poor Slope Too sandy	 0.00 0.00
65D2: Lindley, moderately eroded-----	85	Fair Organic matter content Too acid	 0.18 0.68	Poor Low strength Shrink-swell	 0.00 0.95	Fair Slope	 0.37
65D3: Lindley, severely eroded-----	85	Fair Organic matter content Too acid	 0.18 0.68	Fair Shrink-swell	 0.96	Fair Slope	 0.37
65E2: Lindley, moderately eroded-----	85	Fair Organic matter content Too acid	 0.18 0.68	Poor Low strength Shrink-swell Slope	 0.00 0.95 0.98	Poor Slope	 0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
65E3: Lindley, severely eroded-----	85	Fair Organic matter content Too acid	0.18 0.68	Fair Shrink-swell Slope	0.96 0.98	Poor Slope	0.00
65F: Lindley-----	100	Fair Organic matter content Too acid	0.60 0.68	Poor Low strength Slope Shrink-swell	0.00 0.18 0.94	Poor Slope	0.00
65F2: Lindley, moderately eroded-----	80	Fair Organic matter content Too acid	0.18 0.68	Poor Low strength Slope Shrink-swell	0.00 0.18 0.95	Poor Slope	0.00
65F3: Lindley, severely eroded-----	90	Fair Organic matter content Too acid	0.18 0.68	Fair Slope Shrink-swell	0.18 0.96	Poor Slope	0.00
65G: Lindley-----	100	Fair Organic matter content Too acid	0.60 0.68	Poor Slope Low strength Shrink-swell	0.00 0.00 0.94	Poor Slope	0.00
75: Givin-----	95	Fair Too clayey Organic matter content Too acid	0.02 0.12 0.54	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.67	Poor Wetness Too clayey Too acid	0.00 0.01 0.98
76B: Ladoga-----	95	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell	0.00 0.65	Fair Too clayey	0.01
76C: Ladoga-----	85	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell	0.00 0.65	Fair Too clayey	0.01

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76C2: Ladoga, moderately eroded-----	95	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell	0.00 0.63	Fair Too clayey	0.01
76D: Ladoga-----	90	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell	0.00 0.65	Fair Too clayey Slope	0.01 0.37
76D2: Ladoga, moderately eroded-----	90	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell	0.00 0.63	Fair Too clayey Slope	0.01 0.37
76D3: Ladoga, severely eroded-----	85	Fair Too clayey Organic matter content Too acid	0.02 0.12 0.74	Poor Low strength Shrink-swell	0.00 0.74	Fair Too clayey Slope	0.01 0.37
76E2: Ladoga, moderately eroded-----	70	Fair Too clayey Too acid Organic matter content	0.02 0.74 0.88	Poor Low strength Shrink-swell Slope	0.00 0.63 0.98	Poor Slope Too clayey	0.00 0.01
76E3: Ladoga, severely eroded-----	85	Fair Too clayey Organic matter content Too acid	0.02 0.12 0.74	Poor Low strength Shrink-swell Slope	0.00 0.74 0.98	Poor Slope Too clayey	0.00 0.01
80B: Clinton-----	100	Fair Too clayey Organic matter content Too acid	0.02 0.50 0.54	Poor Low strength Shrink-swell	0.00 0.37	Fair Too clayey Too acid	0.01 0.98

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80C: Clinton-----	95	Fair Too clayey Organic matter content Too acid	 0.02 0.50 0.54	Poor Low strength Shrink-swell	 0.00 0.37	Fair Too clayey Too acid	 0.01 0.98
80C2: Clinton, moderately eroded-----	85	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Shrink-swell	 0.00 0.22	Fair Too clayey Too acid	 0.01 0.98
80D: Clinton-----	90	Fair Too clayey Organic matter content Too acid	 0.02 0.50 0.54	Poor Low strength Shrink-swell	 0.00 0.37	Fair Too clayey Slope Too acid	 0.01 0.37 0.98
80D2: Clinton, moderately eroded-----	85	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Shrink-swell	 0.00 0.22	Fair Too clayey Slope Too acid	 0.01 0.37 0.98
80D3: Clinton, severely eroded-----	75	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Shrink-swell	 0.00 0.22	Fair Too clayey Slope Too acid	 0.01 0.37 0.98
80E2: Clinton, moderately eroded-----	90	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Shrink-swell Slope	 0.00 0.22 0.98	Poor Slope Too clayey Too acid	 0.00 0.01 0.98
80E3: Clinton, severely eroded-----	70	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Shrink-swell Slope	 0.00 0.22 0.98	Poor Slope Too clayey Too acid	 0.00 0.01 0.98

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80F2: Clinton, moderately eroded-----	90	Fair Too clayey Organic matter content Too acid	 0.02 0.12 0.54	Poor Low strength Slope Shrink-swell	 0.00 0.18 0.22	Poor Slope Too clayey Too acid	 0.00 0.01 0.98
83B: Kenyon-----	75	Fair Organic matter content Too acid	 0.50 0.97	Fair Low strength	 0.78	Good	
83C: Kenyon-----	80	Fair Organic matter content Too acid	 0.50 0.97	Fair Low strength	 0.78	Good	
83C2: Kenyon, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.97 0.99	Fair Low strength	 0.78	Good	
83D2: Kenyon, moderately eroded-----	80	Fair Organic matter content Too acid Water erosion	 0.12 0.97 0.99	Fair Low strength	 0.78	Fair Slope	 0.37
88: Nevin, rarely flooded-----	90	Fair Water erosion Too acid	 0.90 0.99	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.87	Poor Wetness	 0.00
93D2: Shelby, moderately eroded-----	50	Fair Organic matter content Too clayey Too acid	 0.50 0.88 0.97	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope Too clayey	 0.37 0.57
Adair, moderately eroded-----	35	Fair Organic matter content Too clayey Too acid	 0.12 0.68 0.84	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.51	Poor Wetness Slope Too clayey	 0.00 0.37 0.39

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
93D3: Shelby, severely eroded-----	50	Fair Organic matter content Too clayey Too acid	 0.12 0.88 0.97	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope Too clayey	 0.37 0.57
Adair, severely eroded-----	30	Fair Organic matter content Too clayey Too acid	 0.12 0.68 0.84	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.51	Poor Wetness Slope Too clayey	 0.00 0.37 0.39
93E2: Shelby, moderately eroded-----	60	Fair Organic matter content Too clayey Too acid	 0.50 0.88 0.97	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope Too clayey	 0.00 0.57
Adair, moderately eroded-----	35	Fair Organic matter content Too clayey Too acid	 0.12 0.68 0.84	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.51	Poor Wetness Slope Too clayey	 0.00 0.00 0.39
119: Muscatine-----	95	Fair Too clayey Water erosion Too acid	 0.88 0.90 0.97	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.69	Poor Wetness Too clayey	 0.00 0.77
120B: Tama-----	95	Fair Too acid Water erosion Too clayey	 0.84 0.90 0.98	Poor Low strength Shrink-swell	 0.00 0.87	Fair Too clayey	 0.86
120C: Tama-----	85	Fair Too acid Water erosion Too clayey	 0.84 0.90 0.98	Poor Low strength Shrink-swell	 0.00 0.87	Fair Too clayey	 0.86
120C2: Tama, moderately eroded-----	75	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Fair Too clayey	 0.86

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material	Potential as source of roadfill		Potential as source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120D2: Tama, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope Too clayey	 0.37 0.86
120D3: Tama, severely eroded-----	80	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope	 0.37
120E2: Tama, moderately eroded-----	80	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.90	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope Too clayey	 0.00 0.86
122: Sperry-----	95	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.90	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.88	Poor Wetness	 0.00
133: Colo, occasionally flooded-----	90	Fair Too clayey	 0.88	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.89	Poor Wetness Too clayey	 0.00 0.88
133+: Colo, occasionally flooded, overwash--	90	Fair Too clayey	 0.88	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.92	Poor Wetness Too clayey	 0.00 0.88
162B: Downs-----	95	Fair Organic matter content Too acid Water erosion	 0.88 0.88 0.90	Poor Low strength Shrink-swell	 0.00 0.94	Fair Too clayey	 0.72
162C: Downs-----	85	Fair Organic matter content Too acid Water erosion	 0.88 0.88 0.90	Poor Low strength Shrink-swell	 0.00 0.94	Fair Too clayey	 0.72

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162C2: Downs, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.90	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.72
162D2: Downs, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.90	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.72
162D3: Downs, severely eroded-----	80	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.90	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.58
162E2: Downs, moderately eroded-----	75	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.90	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope Too clayey	0.00 0.72
162E3: Downs, severely eroded-----	75	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.90	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope Too clayey	0.00 0.58
163B: Fayette-----	95	Fair Organic matter content Too acid Water erosion	0.12 0.68 0.90	Poor Low strength Shrink-swell	0.00 0.91	Good	
163C: Fayette-----	90	Fair Organic matter content Too acid Water erosion	0.12 0.68 0.90	Poor Low strength Shrink-swell	0.00 0.91	Good	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163C2: Fayette, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Good	
163D: Fayette-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.91	Fair Slope	0.37
163D2: Fayette, moderately eroded-----	65	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope	0.37
163D3: Fayette, severely eroded-----	60	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Fair Slope	0.37
163E: Fayette-----	75	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell Slope	 0.00 0.91 0.98	Poor Slope	0.00
163E2: Fayette, moderately eroded-----	70	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope	0.00
163E3: Fayette, severely eroded-----	70	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope	0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163F: Fayette-----	75	Fair		Poor		Poor	
		Organic matter content	0.12	Low strength Slope	0.00 0.18	Slope	0.00
		Too acid	0.68	Shrink-swell	0.91		
		Water erosion	0.90				
163F2: Fayette, moderately eroded-----	70	Fair		Poor		Poor	
		Organic matter content	0.12	Low strength Slope	0.00 0.18	Slope	0.00
		Too acid	0.68	Shrink-swell	0.87		
		Water erosion	0.90				
163F3: Fayette, severely eroded-----	70	Fair		Poor		Poor	
		Organic matter content	0.12	Low strength Slope	0.00 0.18	Slope	0.00
		Too acid	0.68	Shrink-swell	0.87		
		Water erosion	0.90				
163G: Fayette-----	85	Fair		Poor		Poor	
		Organic matter content	0.12	Slope Low strength	0.00 0.00	Slope	0.00
		Too acid	0.68	Shrink-swell	0.91		
		Water erosion	0.90				
165: Stronghurst-----	95	Fair		Poor		Poor	
		Organic matter content	0.88	Wetness Low strength	0.00 0.00	Wetness Too clayey	0.00 0.70
		Too acid	0.97	Shrink-swell	0.97		
		Too clayey	0.98				
171C2: Bassett, moderately eroded-----	85	Fair		Fair		Good	
		Organic matter content	0.88	Low strength	0.78		
		Too acid	0.88				
171D2: Bassett, moderately eroded-----	80	Fair		Fair		Fair	
		Organic matter content	0.88	Low strength	0.78	Slope	0.37
		Too acid	0.88				
171D3: Bassett, severely eroded-----	75	Fair		Fair		Fair	
		Organic matter content	0.88	Low strength	0.78	Slope	0.37
		Too acid	0.88				

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171E2: Bassett, moderately eroded-----	80	Fair Organic matter content Too acid	0.88 0.88	Fair Low strength Slope	0.78 0.98	Poor Slope	0.00
171E3: Bassett, severely eroded-----	75	Fair Organic matter content Too acid	0.88 0.88	Fair Low strength Slope	0.78 0.98	Poor Slope	0.00
172: Wabash, occasionally flooded-----	100	Poor Too clayey Too acid	0.00 0.97	Poor Wetness Shrink-swell Low strength	0.00 0.00 0.00	Poor Too clayey Wetness	0.00 0.00
175: Dickinson-----	100	Fair Organic matter content Too acid Droughty	0.12 0.84 0.99	Good		Good	
175B: Dickinson-----	95	Fair Organic matter content Too acid Droughty	0.12 0.84 0.99	Good		Good	
175C: Dickinson-----	85	Fair Organic matter content Too acid Droughty	0.12 0.84 0.99	Good		Good	
178: Waukee-----	90	Fair Organic matter content Too acid	0.50 0.74	Good		Fair Hard to reclaim (rock fragments)	0.98
178B: Waukee-----	100	Fair Organic matter content Too acid	0.50 0.74	Good		Fair Hard to reclaim (rock fragments)	0.98
178C: Waukee-----	100	Fair Organic matter content Too acid	0.50 0.74	Good		Fair Hard to reclaim (rock fragments)	0.98

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material	Potential as source of roadfill		Potential as source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179D2: Gara, moderately eroded-----	80	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.95	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.55
179D3: Gara, severely eroded-----	70	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.98	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.57
179E2: Gara, moderately eroded-----	85	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.95	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope Too clayey	0.00 0.55
179E3: Gara, severely eroded-----	75	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.98	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope Too clayey	0.00 0.57
179F2: Gara, moderately eroded-----	85	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.95	Poor Low strength Slope Shrink-swell	0.00 0.18 0.87	Poor Slope Too clayey	0.00 0.55
179F3: Gara, severely eroded-----	90	Fair Organic matter content Too acid Too clayey	0.12 0.68 0.98	Poor Low strength Slope Shrink-swell	0.00 0.18 0.87	Poor Slope Too clayey	0.00 0.57
180: Keomah-----	95	Fair Too clayey Too acid Organic matter content	0.05 0.32 0.88	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.46	Poor Wetness Too clayey Too acid	0.00 0.03 0.88

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
192D2: Adair, moderately eroded-----	75	Fair		Poor		Poor	
		Organic matter content	0.12	Wetness	0.00	Wetness	0.00
		Too clayey	0.68	Low strength	0.00	Slope	0.37
		Too acid	0.84	Shrink-swell	0.51	Too clayey	0.39
192D3: Adair, severely eroded-----	70	Fair		Poor		Poor	
		Organic matter content	0.12	Wetness	0.00	Wetness	0.00
		Too clayey	0.68	Low strength	0.00	Slope	0.37
		Too acid	0.84	Shrink-swell	0.51	Too clayey	0.39
220: Nodaway, occasionally flooded-----	85	Fair		Poor		Good	
		Organic matter content	0.12	Low strength	0.00		
		Water erosion	0.90	Shrink-swell	0.87		
279: Taintor-----	90	Fair		Poor		Poor	
		Organic matter content	0.50	Wetness	0.00	Wetness	0.00
		Too clayey	0.82	Low strength	0.00	Too clayey	0.81
		Water erosion	0.90	Shrink-swell	0.70		
280: Mahaska-----	95	Fair		Poor		Poor	
		Too acid	0.54	Wetness	0.00	Wetness	0.00
		Water erosion	0.90	Low strength	0.00		
				Shrink-swell	0.41		
281B: Otley-----	100	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.02
		Too acid	0.54	Shrink-swell	0.31	Wetness	0.53
		Water erosion	0.90	Wetness	0.53	Too acid	0.98
281C: Otley-----	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.02
		Too acid	0.54	Shrink-swell	0.31	Wetness	0.53
		Water erosion	0.90	Wetness	0.53	Too acid	0.98
281C2: Otley, moderately eroded-----	85	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Organic matter content	0.50	Shrink-swell	0.27	Wetness	0.53
		Too acid	0.54	Wetness	0.53	Too acid	0.98

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
281D2: Otley, moderately eroded-----	80	Fair Too clayey Organic matter content Too acid	 0.02 0.50 0.54	Poor Low strength Shrink-swell Wetness	 0.00 0.27 0.53	Fair Too clayey Slope Wetness	 0.01 0.37 0.53
281D3: Otley, severely eroded-----	80	Fair Too clayey Organic matter content Too acid	 0.02 0.50 0.54	Poor Low strength Shrink-swell Wetness	 0.00 0.35 0.53	Fair Too clayey Slope Wetness	 0.01 0.37 0.53
281E2: Otley, moderately eroded-----	85	Fair Too clayey Organic matter content Too acid	 0.02 0.50 0.54	Poor Low strength Shrink-swell Wetness	 0.00 0.27 0.53	Poor Slope Too clayey Wetness	 0.00 0.01 0.53
291: Atterberry-----	90	Fair Organic matter content Water erosion Too acid	 0.18 0.90 0.97	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.99	Poor Wetness	 0.00
293C: Fayette-----	45	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.91	Good	
Chelsea-----	35	Poor Too sandy Wind erosion Organic matter content	 0.00 0.00 0.12	Good		Poor Too sandy	 0.00
Tell-----	20	Fair Organic matter content Too acid Water erosion	 0.12 0.84 0.99	Good		Good	
293D: Fayette-----	45	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Shrink-swell	 0.00 0.91	Fair Slope	 0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293D: Chelsea-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Good		Poor Too sandy Slope	0.00 0.37
Tell-----	20	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.99	Good		Fair Slope	0.37
293D2: Fayette, moderately eroded-----	45	Poor Wind erosion Organic matter content Too acid	0.00 0.12 0.68	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope	0.37
Chelsea, moderately eroded-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Good		Poor Too sandy Slope	0.00 0.37
Tell, moderately eroded-----	20	Poor Too sandy Organic matter content Too acid	0.00 0.12 0.84	Good		Poor Too sandy Slope	0.00 0.37
293E: Fayette-----	40	Fair Organic matter content Too acid Water erosion	0.12 0.68 0.90	Poor Low strength Shrink-swell Slope	0.00 0.91 0.98	Poor Slope	0.00
Chelsea-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Fair Slope	0.98	Poor Too sandy Slope	0.00 0.00
Tell-----	25	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.99	Fair Slope	0.98	Poor Slope	0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293E2: Fayette, moderately eroded-----	40	Poor Wind erosion Organic matter content Too acid	0.00 0.12 0.68	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope	0.00
Chelsea, moderately eroded-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Fair Slope	0.98	Poor Too sandy Slope	0.00 0.00
Tell, moderately eroded-----	25	Poor Too sandy Organic matter content Too acid	0.00 0.12 0.84	Fair Slope	0.98	Poor Too sandy Slope	0.00 0.00
293G: Fayette-----	40	Poor Wind erosion Organic matter content Too acid	0.00 0.12 0.68	Poor Low strength Slope Shrink-swell	0.00 0.00 0.91	Poor Slope	0.00
Chelsea-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Poor Slope	0.00	Poor Slope Too sandy	0.00 0.00
Tell-----	25	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.99	Poor Slope	0.00	Poor Slope	0.00
353B: Tell-----	85	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.99	Good		Good	
353C: Tell-----	90	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.99	Good		Good	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
353C2: Tell, moderately eroded-----	90	Poor Too sandy Organic matter content Too acid	0.00 0.12 0.84	Good		Poor Too sandy	0.00
353D2: Tell, moderately eroded-----	90	Poor Too sandy Organic matter content Too acid	0.00 0.12 0.84	Good		Poor Too sandy Slope	0.00 0.37
377B: Dinsdale-----	100	Fair Organic matter content Water erosion Too clayey	0.12 0.90 0.92	Fair Low strength Shrink-swell	0.78 0.99	Fair Too clayey	0.80
377C: Dinsdale-----	85	Fair Organic matter content Water erosion Too clayey	0.12 0.90 0.92	Fair Low strength Shrink-swell	0.78 0.99	Fair Too clayey	0.80
420: Tama, terrace-----	100	Fair Too acid Water erosion Too clayey	0.84 0.90 0.98	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.86
420B: Tama, terrace-----	100	Fair Too acid Water erosion Too clayey	0.84 0.90 0.98	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.86
422: Amana, occasionally flooded-----	90	Fair Organic matter content Too acid Water erosion	0.50 0.84 0.99	Poor Wetness Low strength	0.00 0.00	Poor Wetness	0.00
424D2: Lindley, moderately eroded-----	50	Fair Organic matter content Too acid	0.18 0.68	Poor Low strength Shrink-swell	0.00 0.95	Fair Slope	0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424D2: Keswick, moderately eroded-----	35	Poor Too clayey Organic matter content Too acid	0.00 0.12 0.54	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.43	Poor Wetness Too clayey Slope	0.00 0.00 0.37
424E2: Lindley, moderately eroded-----	45	Fair Organic matter content Too acid	0.18 0.68	Poor Low strength Shrink-swell Slope	0.00 0.95 0.98	Poor Slope	0.00
Keswick, moderately eroded-----	40	Poor Too clayey Organic matter content Too acid	0.00 0.12 0.54	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.43	Poor Wetness Slope Too clayey	0.00 0.00 0.00
424E3: Lindley, severely eroded-----	45	Fair Organic matter content Too acid	0.18 0.68	Fair Shrink-swell Slope	0.96 0.98	Poor Slope	0.00
Keswick, severely eroded-----	40	Fair Organic matter content Too clayey Too acid	0.12 0.50 0.54	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.52	Poor Wetness Slope Too clayey	0.00 0.00 0.29
424F2: Lindley, moderately eroded-----	65	Fair Organic matter content Too acid	0.18 0.68	Poor Low strength Slope Shrink-swell	0.00 0.18 0.95	Poor Slope	0.00
Keswick, moderately eroded-----	25	Poor Too clayey Organic matter content Too acid	0.00 0.12 0.54	Poor Wetness Low strength Slope	0.00 0.00 0.18	Poor Slope Wetness Too clayey	0.00 0.00 0.00
425D2: Keswick, moderately eroded-----	90	Poor Too clayey Organic matter content Too acid	0.00 0.12 0.54	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.43	Poor Wetness Too clayey Slope	0.00 0.00 0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
425D3: Keswick, severely eroded-----	60	Fair Organic matter content Too clayey Too acid	 0.12 0.50 0.54	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.52	Poor Wetness Too clayey Slope	 0.00 0.29 0.37
428B: Ely-----	95	Fair Water erosion	 0.90	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.94	Poor Wetness	 0.00
430: Ackmore, occasionally flooded-----	100	Good		Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.33	Poor Wetness	 0.00
450: Pillot-----	100	Fair Organic matter content Water erosion Too clayey	 0.12 0.90 0.98	Good		Fair Too clayey	 0.86
450B: Pillot-----	90	Fair Organic matter content Water erosion Too clayey	 0.12 0.90 0.98	Good		Fair Too clayey	 0.86
450C: Pillot-----	85	Fair Organic matter content Water erosion Too clayey	 0.12 0.90 0.98	Good		Fair Too clayey	 0.86
453: Tuskeego, rarely flooded-----	75	Fair Organic matter content Too clayey Too acid	 0.50 0.68 0.84	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.82	Poor Wetness Too clayey	 0.00 0.44
462B: Downs, terrace-----	90	Fair Organic matter content Too acid Water erosion	 0.88 0.88 0.90	Poor Low strength Shrink-swell	 0.00 0.94	Fair Too clayey	 0.72

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463B: Fayette, terrace----	100	Fair		Poor		Good	
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.91		
		Too acid	0.68				
		Water erosion	0.90				
463C2: Fayette, moderately eroded, terrace----	90	Fair		Poor		Good	
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.87		
		Too acid	0.68				
		Water erosion	0.90				
463D2: Fayette, moderately eroded, terrace----	90	Fair		Poor		Fair Slope	0.37
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.87		
		Too acid	0.68				
		Water erosion	0.90				
463D3: Fayette, severely eroded, terrace----	80	Fair		Poor		Fair Slope	0.37
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.87		
		Too acid	0.68				
		Water erosion	0.90				
463E2: Fayette, moderately eroded, terrace----	90	Fair		Poor		Poor Slope	0.00
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.87		
		Too acid	0.68	Slope	0.98		
		Water erosion	0.90				
463E3: Fayette, severely eroded, terrace----	90	Fair		Poor		Poor Slope	0.00
		Organic matter content	0.12	Low strength Shrink-swell	0.00 0.87		
		Too acid	0.68	Slope	0.98		
		Water erosion	0.90				
463F2: Fayette, moderately eroded, terrace----	85	Fair		Poor		Poor Slope	0.00
		Organic matter content	0.12	Low strength Slope	0.00 0.18		
		Too acid	0.68	Shrink-swell	0.87		
		Water erosion	0.90				

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
463F3: Fayette, severely eroded, terrace----	90	Fair Organic matter content Too acid Water erosion	 0.12 0.68 0.90	Poor Low strength Slope Shrink-swell	 0.00 0.18 0.87	Poor Slope	 0.00
484: Lawson, occasionally flooded-----	80	Fair Water erosion	 0.90	Poor Wetness Shrink-swell	 0.00 0.99	Poor Wetness	 0.00
587: Chequest, occasionally flooded-----	95	Fair Too clayey Organic matter content Too acid	 0.05 0.50 0.74	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.12	Poor Wetness Too clayey	 0.00 0.03
587+: Chequest, occasionally flooded, overwash--	95	Fair Too clayey Organic matter content Too acid	 0.05 0.50 0.74	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.51	Poor Wetness Too clayey	 0.00 0.03
626: Hayfield-----	90	Fair Organic matter content Too acid	 0.12 0.74	Poor Wetness	 0.00	Poor Wetness	 0.00
663D2: Seaton, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.88 0.99	Poor Low strength	 0.00	Fair Slope	 0.37
663E2: Seaton, moderately eroded-----	85	Fair Organic matter content Too acid Water erosion	 0.12 0.88 0.99	Poor Low strength Slope	 0.00 0.98	Poor Slope	 0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
663E3: Seaton, severely eroded-----	80	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.99	Poor Low strength Slope	0.00 0.98	Poor Slope	0.00
663F2: Seaton, moderately eroded-----	80	Fair Organic matter content Too acid Water erosion	0.12 0.88 0.99	Poor Low strength Slope	0.00 0.18	Poor Slope	0.00
687: Watkins, rarely flooded-----	90	Fair Too acid Water erosion	0.84 0.90	Poor Low strength Shrink-swell	0.00 0.87	Good	
687B: Watkins, rarely flooded-----	100	Fair Too acid Water erosion	0.84 0.90	Poor Low strength Shrink-swell	0.00 0.87	Good	
688: Koszta, rarely flooded-----	95	Fair Organic matter content Water erosion Too clayey	0.12 0.90 0.95	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.91	Poor Wetness Too clayey	0.00 0.55
771B: Waubeeek-----	90	Fair Organic matter content Too acid Water erosion	0.12 0.74 0.99	Good		Good	
771C2: Waubeeek, moderately eroded-----	90	Fair Organic matter content Too acid Water erosion	0.12 0.74 0.99	Good		Good	
792D2: Armstrong, moderately eroded--	75	Fair Too clayey Organic matter content Too acid	0.05 0.12 0.68	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.52	Poor Wetness Too clayey Slope	0.00 0.03 0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
876B: Ladoga, terrace-----	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Too acid	0.74	Shrink-swell	0.65		
		Organic matter content	0.88				
876C: Ladoga, terrace-----	80	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Too acid	0.74	Shrink-swell	0.65		
		Organic matter content	0.88				
876C2: Ladoga, moderately eroded, terrace----	85	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Too acid	0.74	Shrink-swell	0.63		
		Organic matter content	0.88				
876D2: Ladoga, moderately eroded, terrace----	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Too acid	0.74	Shrink-swell	0.63	Slope	0.37
		Organic matter content	0.88				
881B: Otley, terrace-----	95	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.02
		Too acid	0.54	Shrink-swell	0.31	Wetness	0.53
		Water erosion	0.90	Wetness	0.53	Too acid	0.98
911B: Colo-----	55	Fair		Poor		Poor	
		Too clayey	0.88	Wetness	0.00	Wetness	0.00
				Low strength	0.00	Too clayey	0.88
				Shrink-swell	0.89		
Ely-----	35	Fair		Poor		Poor	
		Water erosion	0.90	Wetness	0.00	Wetness	0.00
				Low strength	0.00		
				Shrink-swell	0.94		
993D2: Gara, moderately eroded-----	45	Fair		Poor		Fair	
		Organic matter content	0.12	Low strength	0.00	Slope	0.37
		Too acid	0.68	Shrink-swell	0.87	Too clayey	0.55
		Too clayey	0.95				

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
993D2: Armstrong, moderately eroded--	35	Fair Too clayey Organic matter content Too acid	 0.05 0.12 0.68	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.52	Poor Wetness Too clayey Slope	 0.00 0.03 0.37
993E2: Gara, moderately eroded-----	45	Fair Organic matter content Too acid Too clayey	 0.12 0.68 0.95	Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	Poor Slope Too clayey	 0.00 0.55
Armstrong, moderately eroded--	40	Fair Too clayey Organic matter content Too acid	 0.05 0.12 0.68	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.52	Poor Wetness Slope Too clayey	 0.00 0.00 0.03
993F2: Gara, moderately eroded-----	65	Fair Organic matter content Too acid Too clayey	 0.12 0.68 0.95	Poor Low strength Slope Shrink-swell	 0.00 0.18 0.87	Poor Slope Too clayey	 0.00 0.55
Armstrong, moderately eroded--	25	Fair Too clayey Organic matter content Too acid	 0.05 0.12 0.68	Poor Wetness Low strength Slope	 0.00 0.00 0.18	Poor Slope Wetness Too clayey	 0.00 0.00 0.03
1160: Walford, terrace----	95	Fair Organic matter content Too acid Water erosion	 0.50 0.74 0.90	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.49	Poor Wetness Too clayey	 0.00 0.64
1220: Nodaway, frequently flooded, channeled	75	Fair Organic matter content Water erosion	 0.12 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Good	
1291: Atterberry, terrace	95	Fair Organic matter content Water erosion Too acid	 0.18 0.90 0.97	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.99	Poor Wetness	 0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1354: Aquests, ponded-----	100	Not rated		Not rated		Not rated	
1442B: Tama-----	40	Fair Too acid Water erosion Too clayey	0.84 0.90 0.98	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.86
Sparta-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Good		Poor Too sandy	0.00
Pillot-----	20	Fair Organic matter content Water erosion Too clayey	0.12 0.90 0.98	Good		Fair Too clayey	0.86
1442C: Tama-----	40	Fair Too acid Water erosion Too clayey	0.84 0.90 0.98	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.86
Sparta-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.12	Good		Poor Too sandy	0.00
Pillot-----	20	Fair Organic matter content Water erosion Too clayey	0.12 0.90 0.98	Good		Fair Too clayey	0.86
1442C2: Tama, moderately eroded-----	40	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.90	Poor Low strength Shrink-swell	0.00 0.87	Fair Too clayey	0.86
Sparta, moderately eroded-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.60	Good		Poor Too sandy	0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442C2: Pillot, moderately eroded-----	20	Fair Organic matter content Water erosion Too acid	0.12 0.90 0.97	Good		Fair Too clayey	0.70
1442D2: Tama, moderately eroded-----	40	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.90	Poor Low strength Shrink-swell	0.00 0.87	Fair Slope Too clayey	0.37 0.86
Sparta, moderately eroded-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.60	Good		Poor Too sandy Slope	0.00 0.37
Pillot, moderately eroded-----	20	Fair Organic matter content Water erosion Too acid	0.12 0.90 0.97	Good		Fair Slope Too clayey	0.37 0.70
1442E2: Tama, moderately eroded-----	40	Fair Organic matter content Too acid Water erosion	0.12 0.84 0.90	Poor Low strength Shrink-swell Slope	0.00 0.87 0.98	Poor Slope Too clayey	0.00 0.86
Sparta, moderately eroded-----	35	Poor Too sandy Wind erosion Organic matter content	0.00 0.00 0.60	Fair Slope	0.98	Poor Too sandy Slope	0.00 0.00
Pillot, moderately eroded-----	20	Fair Organic matter content Water erosion Too acid	0.12 0.90 0.97	Fair Slope	0.98	Poor Slope Too clayey	0.00 0.70
1540: Quiver, frequently flooded-----	40	Fair Organic matter content Too clayey	0.50 0.98	Poor Wetness Low strength Shrink-swell	0.00 0.00 0.87	Poor Wetness Too clayey	0.00 0.64

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1540: Zook, frequently flooded-----	30	Fair Too clayey Water erosion	 0.12 0.99	Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.12	Poor Wetness Too clayey	 0.00 0.12
Klum, frequently flooded-----	15	Fair Organic matter content	 0.12	Good		Good	
2219: Ella, rarely flooded	70	Fair Too acid Water erosion	 0.84 0.99	Poor Low strength Shrink-swell	 0.00 0.87	Good	
2219B: Ella, rarely flooded	75	Fair Too acid Water erosion	 0.84 0.99	Poor Low strength Shrink-swell	 0.00 0.87	Good	
2219C2: Ella, moderately eroded-----	80	Fair Too acid Organic matter content Water erosion	 0.84 0.88 0.99	Poor Low strength Shrink-swell	 0.00 0.87	Good	
2422: Amana, occasionally flooded-----	50	Fair Organic matter content Too acid Water erosion	 0.50 0.84 0.99	Poor Wetness Low strength	 0.00 0.00	Poor Wetness	 0.00
Nodaway, occasionally flooded-----	30	Fair Organic matter content Water erosion	 0.12 0.90	Poor Low strength Shrink-swell	 0.00 0.87	Good	
Lawson, occasionally flooded-----	20	Fair Water erosion	 0.90	Poor Wetness Shrink-swell	 0.00 0.99	Poor Wetness	 0.00
4946: Udorthents-----	65	Not rated		Not rated		Not rated	
Interstate highway--	30	Not rated		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Fair Organic matter content Water erosion	0.12 0.90	Poor Low strength Shrink-swell	0.00 0.87	Good	
6422: Amana, frequently flooded-----	90	Fair Organic matter content Too acid Water erosion	0.50 0.84 0.99	Poor Wetness Low strength	0.00 0.00	Poor Wetness	0.00
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Water Management

The table “Ponds and Embankments” gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Ponds and Embankments

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5B: Ackmore-----	45	Somewhat limited Seepage Slope	0.70 0.08	Very limited Depth to saturated zone Piping	1.00 0.02	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
Colo-----	35	Somewhat limited Seepage Slope	0.72 0.08	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
7: Wiota, rarely flooded-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.16	Very limited Depth to water	1.00
7B: Wiota, rarely flooded-----	100	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.16	Very limited Depth to water	1.00
8B: Judson-----	95	Somewhat limited Seepage Slope	0.72 0.08	Somewhat limited Piping	0.07	Very limited Depth to water	1.00
24C2: Shelby, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.04	Not limited		Very limited Depth to water	1.00
24D2: Shelby, moderately eroded-----	70	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
24D3: Shelby, severely eroded-----	90	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
24E2: Shelby, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24E3: Shelby, severely eroded-----	95	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
41: Sparta-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
41B: Sparta-----	100	Very limited Seepage Slope	1.00 0.08	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
41C: Sparta-----	85	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
41D: Sparta-----	75	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
43: Bremer, rarely flooded-----	100	Somewhat limited Seepage	0.05	Very limited Depth to saturated zone Hard to pack	1.00 0.55	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
51: Vesser, occasionally flooded-----	95	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone Piping	1.00 0.14	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
54: Zook, occasionally flooded-----	100	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Hard to pack	1.00 0.67	Somewhat limited Slow refill Cutbanks cave	0.96 0.10
54+: Zook, occasionally flooded, overwash--	100	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Hard to pack	1.00 0.40	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
63C: Chelsea-----	90	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
63E: Chelsea-----	95	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
63G: Chelsea-----	95	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
65D2: Lindley, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
65D3: Lindley, severely eroded-----	85	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.67	Very limited Depth to water	1.00
65E2: Lindley, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
65E3: Lindley, severely eroded-----	85	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.67	Very limited Depth to water	1.00
65F: Lindley-----	100	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.54	Very limited Depth to water	1.00
65F2: Lindley, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
65F3: Lindley, severely eroded-----	90	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.67	Very limited Depth to water	1.00
65G: Lindley-----	100	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.54	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
75: Givin-----	95	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
76B: Ladoga-----	95	Somewhat limited Seepage Slope	0.72 0.08	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76C: Ladoga-----	85	Somewhat limited Slope Seepage	0.92 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76C2: Ladoga, moderately eroded-----	95	Somewhat limited Slope Seepage	0.92 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76D: Ladoga-----	90	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76D2: Ladoga, moderately eroded-----	90	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76D3: Ladoga, severely eroded-----	85	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
76E2: Ladoga, moderately eroded-----	70	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
76E3: Ladoga, severely eroded-----	85	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80B: Clinton-----	100	Somewhat limited Slope Seepage	0.08 0.04	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80C: Clinton-----	95	Somewhat limited Slope Seepage	0.92 0.04	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80C2: Clinton, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80D: Clinton-----	90	Very limited Slope Seepage	1.00 0.04	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80D2: Clinton, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80D3: Clinton, severely eroded-----	75	Very limited Slope Seepage	1.00 0.70	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80E2: Clinton, moderately eroded-----	90	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
80E3: Clinton, severely eroded-----	70	Very limited Slope Seepage	1.00 0.70	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
80F2: Clinton, moderately eroded-----	90	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
83B: Kenyon-----	75	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.46	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
83C: Kenyon-----	80	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.46	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
83C2: Kenyon, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.45	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
83D2: Kenyon, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.45	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
88: Nevin, rarely flooded-----	90	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
93D2: Shelby, moderately eroded-----	50	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Adair, moderately eroded-----	35	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
93D3: Shelby, severely eroded-----	50	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Adair, severely eroded-----	30	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
93E2: Shelby, moderately eroded-----	60	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Adair, moderately eroded-----	35	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
119: Muscatine-----	95	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
120B: Tama-----	95	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
120C: Tama-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
120C2: Tama, moderately eroded-----	75	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
120D2: Tama, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
120D3: Tama, severely eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
120E2: Tama, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
122: Sperry-----	95	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Ponding	1.00 1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
133: Colo, occasionally flooded-----	90	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
133+: Colo, occasionally flooded, overwash--	90	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
162B: Downs-----	95	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
162C: Downs-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
162C2: Downs, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.25	Very limited Depth to water	1.00
162D2: Downs, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.25	Very limited Depth to water	1.00
162D3: Downs, severely eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.33	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162E2: Downs, moderately eroded-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.25	Very limited Depth to water	1.00
162E3: Downs, severely eroded-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.33	Very limited Depth to water	1.00
163B: Fayette-----	95	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
163C: Fayette-----	90	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
163C2: Fayette, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
163D: Fayette-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
163D2: Fayette, moderately eroded-----	65	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
163D3: Fayette, severely eroded-----	60	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
163E: Fayette-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
163E2: Fayette, moderately eroded-----	70	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
163E3: Fayette, severely eroded-----	70	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
163F: Fayette-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
163F2: Fayette, moderately eroded-----	70	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
163F3: Fayette, severely eroded-----	70	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
163G: Fayette-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
165: Stronghurst-----	95	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
171C2: Basset, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.52	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
171D2: Basset, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.52	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
171D3: Basset, severely eroded-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.52	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
171E2: Bassett, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.52	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
171E3: Bassett, severely eroded-----	75	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.52	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
172: Wabash, occasionally flooded-----	100	Not limited		Very limited Depth to saturated zone Hard to pack	1.00 1.00	Very limited Slow refill Cutbanks cave	1.00 0.10
175: Dickinson-----	100	Very limited Seepage	1.00	Somewhat limited Seepage	0.36	Very limited Depth to water	1.00
175B: Dickinson-----	95	Very limited Seepage Slope	1.00 0.08	Somewhat limited Seepage	0.36	Very limited Depth to water	1.00
175C: Dickinson-----	85	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.36	Very limited Depth to water	1.00
178: Waukee-----	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.20	Very limited Depth to water	1.00
178B: Waukee-----	100	Very limited Seepage Slope	1.00 0.08	Somewhat limited Seepage	0.20	Very limited Depth to water	1.00
178C: Waukee-----	100	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.20	Very limited Depth to water	1.00
179D2: Gara, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
179D3: Gara, severely eroded-----	70	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
179E2: Gara, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
179E3: Gara, severely eroded-----	75	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
179F2: Gara, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
179F3: Gara, severely eroded-----	90	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
180: Keomah-----	95	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.96 0.10
192D2: Adair, moderately eroded-----	75	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
192D3: Adair, severely eroded-----	70	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
220: Nodaway, occasionally flooded-----	85	Somewhat limited Seepage	0.70	Very limited Piping	1.00	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
279: Taintor-----	90	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone Hard to pack	1.00 0.09	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
280: Mahaska-----	95	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
281B: Otley-----	100	Somewhat limited Seepage Slope	0.72 0.08	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
281C: Otley-----	90	Somewhat limited Slope Seepage	0.92 0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
281C2: Otley, moderately eroded-----	85	Somewhat limited Slope Seepage	0.92 0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
281D2: Otley, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
281D3: Otley, severely eroded-----	80	Very limited Slope Seepage	1.00 0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
281E2: Otley, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
291: Atterberry-----	90	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.13	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
293C: Fayette-----	45	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
Chelsea-----	35	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell-----	20	Very limited Seepage Slope	1.00 0.92	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
293D: Fayette-----	45	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
Chelsea-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell-----	20	Very limited Seepage Slope	1.00 1.00	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
293D2: Fayette, moderately eroded-----	45	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
Chelsea, moderately eroded-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell, moderately eroded-----	20	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
293E: Fayette-----	40	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
Chelsea-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell-----	25	Very limited Seepage Slope	1.00 1.00	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
293E2: Fayette, moderately eroded-----	40	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
Chelsea, moderately eroded-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell, moderately eroded-----	25	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
293G: Fayette-----	40	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
Chelsea-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.12	Very limited Depth to water	1.00
Tell-----	25	Very limited Seepage Slope	1.00 1.00	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
353B: Tell-----	85	Very limited Seepage Slope	1.00 0.08	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
353C: Tell-----	90	Very limited Seepage Slope	1.00 0.92	Very limited Piping Seepage	1.00 0.64	Very limited Depth to water	1.00
353C2: Tell, moderately eroded-----	90	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
353D2: Tell, moderately eroded-----	90	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
377B: Dinsdale-----	100	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.26	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
377C: Dinsdale-----	85	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.26	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
420: Tama, terrace-----	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
420B: Tama, terrace-----	100	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
422: Amana, occasionally flooded-----	90	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone Piping	1.00 0.17	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
424D2: Lindley, moderately eroded-----	50	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
Keswick, moderately eroded-----	35	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
424E2: Lindley, moderately eroded-----	45	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
Keswick, moderately eroded-----	40	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
424E3: Lindley, severely eroded-----	45	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.67	Very limited Depth to water	1.00
Keswick, severely eroded-----	40	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
424F2: Lindley, moderately eroded-----	65	Very limited Slope Seepage	1.00 0.04	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
Keswick, moderately eroded-----	25	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
425D2: Keswick, moderately eroded-----	90	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
425D3: Keswick, severely eroded-----	60	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone	1.00	Very limited Depth to water	1.00
428B: Ely-----	95	Somewhat limited Seepage Slope	0.72 0.08	Very limited Depth to saturated zone Piping	1.00 0.25	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
430: Ackmore, occasionally flooded-----	100	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.02	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
450: Pillot-----	100	Very limited Seepage	1.00	Very limited Piping Seepage	0.99 0.10	Very limited Depth to water	1.00
450B: Pillot-----	90	Very limited Seepage Slope	1.00 0.08	Very limited Piping Seepage	0.99 0.10	Very limited Depth to water	1.00
450C: Pillot-----	85	Very limited Seepage Slope	1.00 0.92	Very limited Piping Seepage	0.99 0.10	Very limited Depth to water	1.00
453: Tuskeego, rarely flooded-----	75	Not limited		Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
462B: Downs, terrace-----	90	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
463B: Fayette, terrace----	100	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.43	Very limited Depth to water	1.00
463C2: Fayette, moderately eroded, terrace----	90	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
463D2: Fayette, moderately eroded, terrace----	90	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
463D3: Fayette, severely eroded, terrace----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
463E2: Fayette, moderately eroded, terrace----	90	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
463E3: Fayette, severely eroded, terrace----	90	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
463F2: Fayette, moderately eroded, terrace----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.34	Very limited Depth to water	1.00
463F3: Fayette, severely eroded, terrace----	90	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.42	Very limited Depth to water	1.00
484: Lawson, occasionally flooded-----	80	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.99	Somewhat limited Slow refill Cutbanks cave	0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
587: Chequest, occasionally flooded-----	95	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Hard to pack	1.00 0.08	Somewhat limited Slow refill Cutbanks cave	0.96 0.10
587+: Chequest, occasionally flooded, overwash--	95	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
626: Hayfield-----	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage	1.00 0.10	Very limited Cutbanks cave	1.00
663D2: Seaton, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.90	Very limited Depth to water	1.00
663E2: Seaton, moderately eroded-----	85	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.90	Very limited Depth to water	1.00
663E3: Seaton, severely eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.90	Very limited Depth to water	1.00
663F2: Seaton, moderately eroded-----	80	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.90	Very limited Depth to water	1.00
687: Watkins, rarely flooded-----	90	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.59	Very limited Depth to water	1.00
687B: Watkins, rarely flooded-----	100	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.59	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
688: Koszta, rarely flooded-----	95	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
771B: Waubeek-----	90	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.46	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
771C2: Waubeek, moderately eroded-----	90	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.41	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
792D2: Armstrong, moderately eroded--	75	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone Piping	1.00 0.01	Very limited Depth to water	1.00
876B: Ladoga, terrace----	90	Somewhat limited Seepage	0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
876C: Ladoga, terrace----	80	Somewhat limited Slope Seepage	0.92 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
876C2: Ladoga, moderately eroded, terrace----	85	Somewhat limited Slope Seepage	0.92 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
876D2: Ladoga, moderately eroded, terrace----	90	Very limited Slope Seepage	1.00 0.72	Not limited		Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
881B: Otley, terrace-----	95	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone	0.99	Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	0.28 0.10 0.01
911B: Colo-----	55	Somewhat limited Seepage Slope	0.72 0.08	Very limited Depth to saturated zone	1.00	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
Ely-----	35	Somewhat limited Seepage Slope	0.72 0.08	Very limited Depth to saturated zone Piping	1.00 0.25	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
993D2: Gara, moderately eroded-----	45	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Armstrong, moderately eroded--	35	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone Piping	1.00 0.01	Very limited Depth to water	1.00
993E2: Gara, moderately eroded-----	45	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Armstrong, moderately eroded--	40	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone Piping	1.00 0.01	Very limited Depth to water	1.00
993F2: Gara, moderately eroded-----	65	Very limited Slope Seepage	1.00 0.04	Not limited		Very limited Depth to water	1.00
Armstrong, moderately eroded--	25	Very limited Slope Seepage	1.00 0.04	Very limited Depth to saturated zone Piping	1.00 0.01	Very limited Depth to water	1.00
1160: Walford, terrace----	95	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.01	Somewhat limited Slow refill Cutbanks cave	0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1220: Nodaway, frequently flooded, channeled	75	Somewhat limited Seepage	0.70	Very limited Piping	1.00	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
1291: Atterberry, terrace	95	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.13	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
1354: Aquests, ponded-----	100	Not limited		Not rated		Not rated	
1442B: Tama-----	40	Somewhat limited Seepage Slope	0.70 0.08	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
Sparta-----	35	Very limited Seepage Slope	1.00 0.08	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
Pillot-----	20	Very limited Seepage Slope	1.00 0.08	Very limited Piping Seepage	0.99 0.10	Very limited Depth to water	1.00
1442C: Tama-----	40	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.03	Very limited Depth to water	1.00
Sparta-----	35	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.35	Very limited Depth to water	1.00
Pillot-----	20	Very limited Seepage Slope	1.00 0.92	Very limited Piping Seepage	0.99 0.10	Very limited Depth to water	1.00
1442C2: Tama, moderately eroded-----	40	Somewhat limited Slope Seepage	0.92 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
Sparta, moderately eroded-----	35	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.34	Very limited Depth to water	1.00
Pillot, moderately eroded-----	20	Very limited Seepage Slope	1.00 0.92	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1442D2: Tama, moderately eroded-----	40	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
Sparta, moderately eroded-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.34	Very limited Depth to water	1.00
Pillot, moderately eroded-----	20	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00
1442E2: Tama, moderately eroded-----	40	Very limited Slope Seepage	1.00 0.70	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
Sparta, moderately eroded-----	35	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.34	Very limited Depth to water	1.00
Pillot, moderately eroded-----	20	Very limited Seepage Slope	1.00 1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00
1540: Quiver, frequently flooded-----	40	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Piping	1.00 0.10	Somewhat limited Slow refill Cutbanks cave	0.96 0.10
Zook, frequently flooded-----	30	Somewhat limited Seepage	0.04	Very limited Depth to saturated zone Hard to pack	1.00 0.67	Somewhat limited Slow refill Cutbanks cave	0.96 0.10
Klum, frequently flooded-----	15	Very limited Seepage	1.00	Not limited		Somewhat limited Depth to saturated zone Cutbanks cave	0.81 0.10
2219: Ella, rarely flooded	70	Somewhat limited Seepage	0.72	Somewhat limited Piping	0.98	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2219B: Ella, rarely flooded	75	Somewhat limited Seepage Slope	0.72 0.08	Somewhat limited Piping	0.98	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
2219C2: Ella, moderately eroded-----	80	Somewhat limited Slope Seepage	0.92 0.72	Very limited Piping	0.99	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.28 0.10
2422: Amana, occasionally flooded-----	50	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone Piping	1.00 0.17	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
Nodaway, occasionally flooded-----	30	Somewhat limited Seepage	0.70	Very limited Piping	1.00	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10
Lawson, occasionally flooded-----	20	Somewhat limited Seepage	0.70	Very limited Depth to saturated zone Piping	1.00 0.97	Somewhat limited Slow refill Cutbanks cave	0.30 0.10
4946: Udorthents-----	65	Not limited		Not rated		Not rated	
Interstate highway--	30	Not limited		Not rated		Not rated	
5010: Pits, sand and gravel-----	100	Not rated		Not rated		Not rated	
5040: Udorthents-----	100	Not rated		Not rated		Not rated	
6220: Nodaway, frequently flooded-----	85	Somewhat limited Seepage	0.70	Very limited Piping	1.00	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6422: Amana, frequently flooded-----	90	Somewhat limited Seepage	0.72	Very limited Depth to saturated zone Piping	1.00 0.17	Somewhat limited Slow refill Cutbanks cave	0.28 0.10
AW: Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL: Sewage lagoon-----	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Properties

The table described in this section gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary in Part I.

Classification of the soils is determined according to the Unified soil classification system (ASTM) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487–00.

Engineering Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
5B:												
Ackmore-----	0-8	Silt loam	ML, CL	A-4, A-7, A-6	0	0	100	100	95-100	85-100	25-50	8-20
	8-25	Silt loam	CL, ML	A-6, A-7, A-4	0	0	100	100	95-100	85-100	25-50	8-20
	25-60	Silty clay loam, silt loam	CL, CH	A-6, A-7	0	0	100	100	95-100	85-100	35-60	15-30
Colo-----	0-8	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	8-40	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	40-46	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	46-60	Silty clay loam, clay loam, silt loam	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
7:												
Wiota, rarely flooded-----	0-8	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-95	25-35	5-15
	8-22	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-95	25-35	5-15
	22-48	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-95	40-50	15-25
	48-64	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-95	30-50	15-30
7B:												
Wiota, rarely flooded-----	0-8	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-95	25-35	5-15
	8-22	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-95	25-35	5-15
	22-48	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-95	40-50	15-25
	48-64	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-95	30-50	15-30
8B:												
Judson-----	0-8	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	8-28	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	28-52	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
	52-60	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	100	95-100	25-50	5-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
24C2: Shelby, moderately eroded-----												
	0-8	Loam, clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-11	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	11-42	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	42-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
24D2: Shelby, moderately eroded-----												
	0-8	Loam, clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-11	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	11-42	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	42-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
24D3: Shelby, severely eroded-----												
	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-36	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	36-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
24E2: Shelby, moderately eroded-----												
	0-8	Loam, clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-11	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	11-42	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	42-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
24E3: Shelby, severely eroded-----												
	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-36	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	36-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
41: Sparta-----												
	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
41B: Sparta-----	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2
41C: Sparta-----	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2
41D: Sparta-----	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2
43: Bremer, rarely flooded-----	0-8	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-60	25-40
	8-19	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-60	25-40
	19-42	Silty clay loam, silty clay	CH, MH	A-7	0	0	100	100	100	95-100	50-65	20-35
	42-60	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	95-100	40-60	25-40
51: Vesser, occasionally flooded-----	0-8	Silt loam	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	8-12	Silt loam	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	12-31	Silt loam	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	31-60	Silty clay loam	CL	A-7	0	0	100	100	98-100	95-100	40-50	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
					Pct	Pct						
54: Zook, occasionally flooded-----	In				Pct	Pct					Pct	
	0-8	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	8-38	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	38-52	Silty clay, silty clay loam	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-55
	52-60	Silty clay loam, silty clay, silt loam	CH, CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	35-80	10-50
54+: Zook, occasionally flooded, overwash-----	0-8	Silt loam	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	8-14	Silt loam	CL	A-6	0	0	100	100	98-100	95-100	30-40	10-20
	14-38	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	38-52	Silty clay, silty clay loam	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-55
	52-60	Silty clay loam, silty clay, silt loam	CH, CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	35-80	10-50
63C: Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
63E: Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
63G: Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
65D2: Lindley, moderately eroded-----	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65D3: Lindley, severely eroded	0-8	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-34	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	34-60	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65E2: Lindley, moderately eroded-----	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65E3: Lindley, severely eroded	0-8	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-34	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	34-60	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65F: Lindley-----	0-3	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	3-7	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	7-46	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	46-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65F2: Lindley, moderately eroded-----	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
65F3: Lindley, severely eroded	0-8	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-34	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	34-60	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
65G: Lindley-----	0-3	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	3-7	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	7-46	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	46-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
75: Givin-----	0-8	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	30-40	5-15
	8-16	Silt loam	CL, ML	A-4, A-6	0	0	100	100	100	95-100	30-40	5-15
	16-42	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	45-60	25-35
	42-80	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	20-30
76B: Ladoga-----	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	14-45	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	45-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76C: Ladoga-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	14-45	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	45-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76C2: Ladoga, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	10-39	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	39-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
76D:												
Ladoga-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	14-45	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	45-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76D2:												
Ladoga, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	10-39	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	39-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76D3:												
Ladoga, severely eroded-----	0-8	Silty clay loam, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-33	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	33-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76E2:												
Ladoga, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	10-39	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	39-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
76E3:												
Ladoga, severely eroded-----	0-8	Silty clay loam, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-33	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	33-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
80B:												
Clinton-----	0-8	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	8-15	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	15-72	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	72-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80C:												
Clinton-----	0-8	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	8-15	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	15-72	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	72-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80C2:												
Clinton, moderately eroded-----	0-8	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	8-10	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	10-66	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	66-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80D:												
Clinton-----	0-8	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	8-15	Silt loam	ML	A-4	0	0	100	100	100	95-100	30-40	5-10
	15-72	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	72-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80D2:												
Clinton, moderately eroded-----	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	8-10	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	10-66	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	66-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
80D3: Clinton, severely eroded												
	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	8-60	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	60-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80E2: Clinton, moderately eroded-----												
	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	8-10	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	10-66	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	66-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80E3: Clinton, severely eroded												
	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	8-60	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	60-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
80F2: Clinton, moderately eroded-----												
	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	8-10	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	10-66	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	66-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
83B: Kenyon-----												
	0-8	Loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	8-14	Loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	14-19	Loam, sandy clay loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	19-47	Loam, clay loam, sandy clay loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	30-40	10-20
	47-76	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
83C:												
Kenyon-----	0-8	Loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	8-14	Loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	14-19	Loam, sandy clay loam, silt loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	19-47	Loam, clay loam, sandy clay loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	30-40	10-20
	47-76	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
83C2:												
Kenyon, moderately eroded-----	0-8	Loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	8-14	Sandy clay loam, loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	14-35	Clay loam, sandy clay loam, loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	30-40	10-20
	35-41	Loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	25-35	10-20
	41-76	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
83D2:												
Kenyon, moderately eroded-----	0-8	Loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	8-14	Sandy clay loam, loam	CL	A-6	0	0-5	95-100	95-100	85-95	65-75	30-40	10-20
	14-35	Clay loam, sandy clay loam, loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	30-40	10-20
	35-41	Loam	CL	A-6	0	0-5	90-95	85-95	80-90	50-65	25-35	10-20
	41-76	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
88:												
Nevin, rarely flooded-----	0-8	Silty clay loam	CL, OL	A-7, A-6	0	0	100	100	100	90-95	35-45	10-20
	8-30	Silty clay loam	CL, OL	A-7, A-6	0	0	100	100	100	90-95	35-45	10-20
	30-46	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-95	40-50	20-30
	46-62	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	90-95	40-50	20-30
93D2:												
Shelby, moderately eroded-----	0-8	Loam, clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-11	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	11-42	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	42-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
93D2: Adair, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-16	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	80-95	70-90	55-80	40-55	20-30
	16-41	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
	41-80	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
93D3: Shelby, severely eroded-----	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-36	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	36-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
Adair, severely eroded-----	0-8	Clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-16	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	80-95	70-90	55-80	40-55	20-30
	16-35	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
	35-80	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
93E2: Shelby, moderately eroded-----	0-8	Loam, clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	8-11	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	75-90	55-70	35-45	15-25
	11-42	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
	42-72	Clay loam	CL	A-6, A-7	0	0-5	90-95	85-95	75-90	55-70	30-45	15-25
Adair, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-16	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	80-95	70-90	55-80	40-55	20-30
	16-41	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
	41-80	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
119: Muscatine-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-20	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	20-42	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	20-30
	42-64	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
120B: Tama-----	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
120C: Tama-----	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
120C2: Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
120D2: Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
120D3: Tama, severely eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-20	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	20-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
120E2: Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
122: Sperry-----	0-8	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
	8-10	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
	10-17	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
	17-28	Silty clay, silty clay loam	CH	A-7	0	0	100	100	100	95-100	50-65	25-35
	28-47	Silty clay loam, silt loam	CL	A-7	0	0	100	100	100	95-100	40-50	20-30
	47-80	Silty clay loam, silt loam	CL	A-7	0	0	100	100	100	95-100	40-50	20-30
133: Colo, occasionally flooded-----	0-8	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	8-40	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	40-46	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	46-60	Silty clay loam, clay loam, silt loam	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
133+: Colo, occasionally flooded, overwash-----	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	14-40	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	40-46	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	46-60	Silty clay loam, clay loam, silt loam	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
162B: Downs-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-17	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	17-39	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	39-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
162C:												
Downs-----	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	8-17	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	17-39	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	39-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
162C2:												
Downs, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-33	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	33-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
162D2:												
Downs, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-33	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	33-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
162D3:												
Downs, severely eroded-----	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-27	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	27-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
162E2:												
Downs, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-33	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	33-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
162E3:												
Downs, severely eroded-----	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-27	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	27-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
163B:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163C:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163C2:												
Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163D:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163D2:												
Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163D3:												
Fayette, severely eroded	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
163E:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163E2:												
Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163E3:												
Fayette, severely eroded	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163F:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163F2:												
Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
163F3:												
Fayette, severely eroded	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
163G:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
165:												
Stronghurst-----	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-35	5-15
	8-11	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-35	5-15
	11-15	Silty clay loam, silt loam	CH, CL	A-7	0	0	100	100	100	98-100	40-55	20-35
	15-47	Silty clay loam, silt loam	CH, CL	A-7	0	0	100	100	100	98-100	40-55	20-35
	47-60	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-35	5-15
171C2:												
Bassett, moderately eroded-----	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	85-95	65-85	20-30	5-15
	8-53	Loam, clay loam, sandy clay loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
	53-73	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
171D2:												
Bassett, moderately eroded-----	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	85-95	65-85	20-30	5-15
	8-53	Loam, clay loam, sandy clay loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
	53-73	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
171D3:												
Bassett, severely eroded	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	85-95	65-85	20-30	5-15
	8-47	Loam, clay loam, sandy clay loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
	47-73	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
171E2:												
Bassett, moderately eroded-----	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	85-95	65-85	20-30	5-15
	8-53	Loam, clay loam, sandy clay loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
	53-73	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
171E3: Bassett, severely eroded	0-8	Loam	CL, CL-ML	A-6, A-4	0	0	100	95-100	85-95	65-85	20-30	5-15
	8-47	Loam, clay loam, sandy clay loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
	47-73	Loam	CL	A-6	0	2-5	90-95	85-95	80-90	50-65	30-40	11-20
172: Wabash, occasionally flooded-----	0-8	Silty clay	CH	A-7	0	0	100	100	100	95-100	50-75	30-50
	8-19	Silty clay, clay	CH	A-7	0	0	100	100	100	95-100	52-78	30-55
	19-60	Silty clay, clay	CH	A-7	0	0	100	100	100	95-100	52-78	30-55
175: Dickinson-----	0-9	Fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	100	85-95	30-50	15-30	NP-10
	9-18	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	18-30	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	30-36	Loamy sand, fine sandy loam, sandy loam	SC-SM, SM, SC	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	36-60	Sand, loamy fine sand, loamy sand	SM	A-2, A-3	0	0	100	100	70-90	5-20	0-14	NP
175B: Dickinson-----	0-9	Fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	100	85-95	30-50	15-30	NP-10
	9-18	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	18-30	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	30-36	Loamy sand, fine sandy loam, sandy loam	SC-SM, SM, SC	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	36-60	Sand, loamy fine sand, loamy sand	SM	A-2, A-3	0	0	100	100	70-90	5-20	0-14	NP
175C: Dickinson-----	0-9	Fine sandy loam	SM, SC-SM, SC	A-2, A-4	0	0	100	100	85-95	30-50	15-30	NP-10
	9-18	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	18-30	Fine sandy loam, sandy loam	SM, SC-SM, SC	A-4, A-2	0	0	100	100	85-95	30-50	15-30	NP-10
	30-36	Loamy sand, fine sandy loam, sandy loam	SC-SM, SM, SC	A-4	0	0	100	100	85-95	35-50	15-30	NP-10
	36-60	Sand, loamy fine sand, loamy sand	SM	A-2, A-3	0	0	100	100	70-90	5-20	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
178:												
Waukee-----	0-8	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	8-16	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	16-20	Loam, sandy clay loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	20-35	Sandy clay loam, loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	35-44	Gravelly loamy coarse sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
	44-66	Very gravelly loamy coarse sand, gravelly sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
178B:												
Waukee-----	0-8	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	8-16	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	16-20	Loam, sandy clay loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	20-35	Sandy clay loam, loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	35-44	Gravelly loamy coarse sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
	44-66	Very gravelly loamy coarse sand, gravelly sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
178C:												
Waukee-----	0-8	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	8-16	Silt loam, loam	CL	A-6	0	0	100	90-100	70-90	50-75	30-40	10-20
	16-20	Loam, sandy clay loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	20-35	Sandy clay loam, loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0-3	90-95	90-95	65-85	40-60	20-35	5-15
	35-44	Gravelly loamy coarse sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
	44-66	Very gravelly loamy coarse sand, gravelly sand	SW, SM, SP- SM, SP	A-1-b	0-5	0-10	60-90	60-85	20-40	3-25	0-14	NP
179D2:												
Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
179D3: Gara, severely eroded-----	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-21	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	21-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
179E2: Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
179E3: Gara, severely eroded-----	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-21	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	21-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
179F2: Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
179F3: Gara, severely eroded-----	0-8	Clay loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-21	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	21-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
180: Keomah-----	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-18	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	4-15
	18-53	Silty clay loam, silty clay	CH	A-7	0	0	100	100	100	95-100	45-60	30-45
	53-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-30
192D2: Adair, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-16	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	80-95	70-90	55-80	40-55	20-30
	16-41	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
	41-80	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
192D3: Adair, severely eroded-----												
	0-8	Clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-16	Clay, silty clay, clay loam	CH, CL	A-7	0	0	95-100	80-95	70-90	55-80	40-55	20-30
	16-35	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
	35-80	Clay loam	CL	A-6, A-7	0	0	95-100	80-95	70-90	55-80	35-50	15-25
220: Nodaway, occasionally flooded-----												
	0-7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
	31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-100	25-40	5-15
	42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
279: Taintor-----												
	0-9	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-60	20-30
	9-20	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-60	20-30
	20-28	Silty clay, silty clay loam	CH	A-7	0	0	100	100	100	95-100	50-65	25-35
	28-36	Silty clay loam, silty clay	CH	A-7	0	0	100	100	100	95-100	50-65	25-35
	36-60	Silty clay loam, silt loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
280: Mahaska-----												
	0-8	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
	8-24	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
	24-30	Silty clay loam, silty clay	CH, MH	A-7	0	0	100	100	100	95-100	50-60	20-30
	30-61	Silty clay loam, silty clay	CH, MH	A-7	0	0	100	100	100	95-100	50-60	20-30
	61-80	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
281B: Otley-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-17	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	17-61	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	61-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
281C: Otley-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-17	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	17-61	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	61-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
281C2: Otley, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-55	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	55-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
281D2: Otley, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-55	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	55-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
281D3: Otley, severely eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-49	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	49-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
281E2: Otley, moderately eroded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-55	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	55-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
291: Atterberry-----	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	8-17	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	17-48	Silty clay loam, silt loam	CH, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-55	15-30
	48-60	Silt loam, loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
293C: Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
293D:												
Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
293D2:												
Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
Chelsea, moderately eroded-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-30	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	30-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
293D2: Tell, moderately eroded-----	0-8	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	8-12	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	12-22	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	22-26	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	26-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
293E: Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
293E2: Fayette, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
293E2: Chelsea, moderately eroded-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-30	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	30-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
Tell, moderately eroded-----	0-8	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	8-12	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	12-22	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	22-26	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	26-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
293G: Fayette-----	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
Chelsea-----	0-4	Fine sand, loamy fine sand	SM, SP-SM	A-2-4	0	0	100	100	65-80	10-35	0-14	NP
	4-36	Loamy fine sand, fine sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
	36-70	Fine sand, loamy fine sand, fine sandy loam, loamy sand	SM, SP, SP-SM	A-3, A-2-4	0	0	100	100	65-85	3-15	0-14	NP
Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
353B: Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
353C: Tell-----	0-9	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	9-18	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	18-28	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	28-32	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	32-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
353C2: Tell, moderately eroded-----	0-8	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	8-12	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	12-22	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	22-26	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	26-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP
353D2: Tell, moderately eroded-----	0-8	Silt loam	CL	A-4	0	0	100	100	90-100	85-95	25-30	7-10
	8-12	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	12-22	Silty clay loam, silt loam	CL	A-6	0	0	100	100	90-100	85-95	30-40	10-16
	22-26	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	26-60	Stratified sand, loamy sand	SP, SP-SM, SM	A-1, A-3, A-2	0	0	100	90-100	45-75	0-30	0-14	NP

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
377B: Dinsdale-----	0-8	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	100	95-100	35-50	12-23
	8-19	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	100	95-100	35-50	12-23
	19-34	Silty clay loam	CL	A-7-6	0	0	100	100	100	95-100	40-50	15-25
	34-46	Clay loam, loam	CL	A-6	0	0-5	90-95	90-95	75-85	55-65	25-35	10-20
	46-80	Clay loam, loam	CL	A-6	0	0-5	90-95	90-95	75-85	55-65	25-35	10-20
377C: Dinsdale-----	0-8	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	100	95-100	35-50	12-23
	8-19	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	100	95-100	35-50	12-23
	19-34	Silty clay loam	CL	A-7-6	0	0	100	100	100	95-100	40-50	15-25
	34-46	Clay loam, loam	CL	A-6	0	0-5	90-95	90-95	75-85	55-65	25-35	10-20
	46-80	Clay loam, loam	CL	A-6	0	0-5	90-95	90-95	75-85	55-65	25-35	10-20
420: Tama, terrace---	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
420B: Tama, terrace---	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
422: Amana, occasionally flooded-----	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	15-37	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	37-48	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	48-80	Silt loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
424D2: Lindley, moderately eroded-----												
	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
Keswick, moderately eroded-----												
	0-8	Clay loam, loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-12	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	12-26	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	26-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25
424E2: Lindley, moderately eroded-----												
	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
Keswick, moderately eroded-----												
	0-8	Clay loam, loam, silt loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-12	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	12-26	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	26-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25
424E3: Lindley, severely eroded												
	0-8	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-34	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	34-60	Clay loam, loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
Keswick, severely eroded												
	0-8	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-13	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	13-20	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	20-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
424F2: Lindley, moderately eroded-----	0-8	Loam	CL	A-6	0	0	95-100	90-100	85-95	50-65	25-35	10-15
	8-40	Clay loam, loam	CL	A-6, A-7	0	0	95-100	90-100	85-95	55-75	30-45	12-20
	40-60	Loam, clay loam	CL	A-6	0	0	95-100	90-100	85-95	50-70	25-35	10-15
Keswick, moderately eroded-----	0-8	Clay loam, loam, silt loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-12	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	12-26	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	26-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25
425D2: Keswick, moderately eroded-----	0-8	Clay loam, loam, silt loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-12	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	12-26	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	26-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25
425D3: Keswick, severely eroded	0-8	Clay loam, loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	8-13	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-100	75-90	60-80	35-50	15-25
	13-20	Clay loam, clay	CH, CL	A-7	0	0-5	90-100	80-100	70-90	55-80	40-70	20-40
	20-60	Clay loam	CL	A-6	0	0-5	90-100	80-100	70-90	55-80	30-40	15-25
428B: Ely-----	0-8	Silty clay loam	CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	30-55	10-25
	8-32	Silty clay loam	CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	30-55	10-25
	32-47	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	47-80	Silt loam, silty clay loam, loam	CL	A-6	0	0	100	100	90-100	85-100	25-40	10-20
430: Ackmore, occasionally flooded-----	0-8	Silt loam	ML, CL	A-4, A-7, A-6	0	0	100	100	95-100	85-100	25-50	8-20
	8-25	Silt loam	CL, ML	A-6, A-7, A-4	0	0	100	100	95-100	85-100	25-50	8-20
	25-60	Silty clay loam, silt loam	CL, CH	A-6, A-7	0	0	100	100	95-100	85-100	35-60	15-30

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
450:												
Pillot-----	0-8	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	15-32	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	32-36	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	36-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
450B:												
Pillot-----	0-8	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	15-32	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	32-36	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	36-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
450C:												
Pillot-----	0-8	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	15-32	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	32-36	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	36-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
453:												
Tuskeego, rarely flooded-----	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-35	5-15
	8-19	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-35	5-15
	19-24	Silty clay loam, silty clay	CH	A-7	0	0	100	100	95-100	95-100	50-60	25-35
	24-60	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	95-100	45-55	25-35
462B:												
Downs, terrace--	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-17	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	17-39	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	39-60	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
463B: Fayette, terrace	0-3	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	3-14	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	14-34	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	34-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463C2: Fayette, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463D2: Fayette, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463D3: Fayette, severely eroded, terrace	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463E2: Fayette, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
463E3: Fayette, severely eroded, terrace	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463F2: Fayette, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-29	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	29-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
463F3: Fayette, severely eroded, terrace	0-8	Silty clay loam, silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	8-22	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
	22-73	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	10-20
484: Lawson, occasionally flooded-----	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	85-100	20-40	5-20
	8-30	Silt loam, silty clay loam	CL, CL-ML	A-4	0	0	100	100	90-100	85-100	20-30	5-10
	30-60	Silty clay loam, silt loam	SC, CL-ML, SC-SM, CL	A-4, A-6	0	0	100	100	60-100	35-85	20-35	5-20
587: Chequest, occasionally flooded-----	0-8	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
	8-12	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
	12-60	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	90-100	45-60	20-30

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
587+: Chequest, occasionally flooded, overwash-----												
	0-8	Silt loam	CL	A-6	0	0	100	100	90-100	85-100	30-40	10-20
	8-12	Silt loam	CL	A-6	0	0	100	100	90-100	85-100	30-40	10-20
	12-24	Silt loam	CL	A-6	0	0	100	100	90-100	85-100	30-40	10-20
	24-60	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	90-100	45-60	20-30
626: Hayfield-----												
	0-8	Silt loam, loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-98	70-90	25-40	6-15
	8-13	Silt loam, loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-98	70-90	25-40	6-15
	13-29	Silt loam, sandy clay loam, clay loam, loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	70-90	40-75	25-40	6-15
	29-80	Loamy sand, sand, loamy coarse sand, coarse sand	SP, SP-SM	A-1-b	0	0-3	85-100	80-95	25-50	0-15	0-14	NP
663D2: Seaton, moderately eroded-----												
	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	20-35	5-15
	8-38	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	38-80	Silt, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
663E2: Seaton, moderately eroded-----												
	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	20-35	5-15
	8-38	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	38-80	Silt, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
663E3: Seaton, severely eroded-----												
	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	20-35	5-15
	8-32	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	32-80	Silt, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
663F2: Seaton, moderately eroded-----												
	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	95-100	20-35	5-15
	8-38	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20
	38-80	Silt, silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	90-100	25-40	5-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
687: Watkins, rarely flooded-----												
	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	85-95	25-35	5-15
	8-18	Silt loam	CL, ML	A-7, A-6	0	0	100	100	95-100	85-95	35-45	10-20
	18-52	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	52-80	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
687B: Watkins, rarely flooded-----												
	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	85-95	25-35	5-15
	8-18	Silt loam	CL, ML	A-7, A-6	0	0	100	100	95-100	85-95	35-45	10-20
	18-52	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
	52-80	Silty clay loam, silt loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
688: Koszta, rarely flooded-----												
	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	8-13	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	13-21	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-30
	21-48	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-30
	48-60	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-30
771B: Waubee-----												
	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	8-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	13-29	Silt loam, silty clay loam	CL	A-7-6	0	0	100	100	100	95-100	40-50	15-25
	29-45	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	75-85	50-65	25-35	10-20
	45-80	Loam, clay loam	CL	A-6	0	0-5	90-95	85-95	75-85	50-65	25-35	10-20
771C2: Waubee, moderately eroded-----												
	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-35	5-15
	8-23	Silt loam, silty clay loam	CL	A-7-6	0	0	100	100	100	95-100	40-50	15-25
	23-28	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	75-85	50-65	25-35	10-20
	28-80	Loam, clay loam	CL	A-6	0	0-5	90-95	85-95	75-85	50-65	25-35	10-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
					4	10	40	200				
	In				Pct	Pct					Pct	
792D2: Armstrong, moderately eroded-----	0-8	Silty clay loam, clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	8-18	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	18-28	Clay loam, clay, silty clay loam	CH, CL, MH, ML	A-7	0	0-5	90-100	80-95	70-90	55-80	45-70	20-35
	28-35	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
	35-60	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
876B: Ladoga, terrace-	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	14-45	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	45-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
876C: Ladoga, terrace-	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	8-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	14-45	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	45-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
876C2: Ladoga, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	10-39	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	39-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20
876D2: Ladoga, moderately eroded, terrace	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	100	95-100	25-40	5-15
	8-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
	10-39	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	39-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	100	95-100	30-40	15-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
881B:												
Otley, terrace--	0-8	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	8-17	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	17-61	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	100	95-100	40-55	25-35
	61-73	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	20-30
911B:												
Colo-----	0-8	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	8-40	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	40-46	Silty clay loam	CH, CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	46-60	Silty clay loam, clay loam, silt loam	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
Ely-----	0-8	Silty clay loam	CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	30-55	10-25
	8-32	Silty clay loam	CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	30-55	10-25
	32-47	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	47-80	Silt loam, silty clay loam, loam	CL	A-6	0	0	100	100	90-100	85-100	25-40	10-20
993D2:												
Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
Armstrong, moderately eroded-----	0-8	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	8-18	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	18-28	Clay loam, clay, silty clay loam	CH, CL, MH, ML	A-7	0	0-5	90-100	80-95	70-90	55-80	45-70	20-35
	28-35	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
	35-60	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
993E2:												
Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
993E2: Armstrong, moderately eroded-----	0-8	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	8-18	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	18-28	Clay loam, clay, silty clay loam	CH, CL, MH, ML	A-7	0	0-5	90-100	80-95	70-90	55-80	45-70	20-35
	28-35	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
	35-60	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
993F2: Gara, moderately eroded-----	0-8	Clay loam, loam	CL	A-6, A-7	0	0	90-95	85-95	70-85	55-75	35-45	15-25
	8-27	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
	27-60	Clay loam, loam	CL	A-6	0	0-5	90-95	85-95	70-85	55-75	30-40	15-25
Armstrong, moderately eroded-----	0-8	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	8-18	Clay loam	CL	A-6, A-7	0	0-5	90-100	80-95	75-90	55-80	35-45	15-25
	18-28	Clay loam, clay, silty clay loam	CH, CL, MH, ML	A-7	0	0-5	90-100	80-95	70-90	55-80	45-70	20-35
	28-35	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
	35-60	Clay loam	CL	A-6	0	0-5	90-100	80-95	70-90	55-80	30-40	15-20
1160: Walford, terrace	0-8	Silt loam	CL	A-6	0	0	100	100	100	95-100	30-35	10-15
	8-22	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	22-50	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-55	20-30
	50-63	Silty clay loam	CH, CL	A-7	0	0	100	100	100	95-100	45-55	20-30
	63-80	Silt loam	CL	A-6	0	0	100	100	100	95-100	35-40	15-20

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
1220: Nodaway, frequently flooded, channeled-----												
	0-7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
	31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-100	25-40	5-15
	42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
1291: Atterberry, terrace-----												
	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	8-17	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	17-48	Silty clay loam, silt loam	CH, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-55	15-30
	48-60	Silt loam, loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
1354. Aguents, ponded												
1442B: Tama-----												
	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
Sparta-----												
	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
1442B:												
Pillot-----	0-8	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	15-32	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	32-36	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	36-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
1442C:												
Tama-----	0-8	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-18	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	18-45	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	45-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
Sparta-----	0-8	Sand, fine sand, loamy sand, loamy fine sand	SC-SM, SP-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-25	NP-6
	8-15	Sand, fine sand, loamy sand, loamy fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-22	NP-6
	15-72	Sand, loamy sand, loamy fine sand, fine sand	SP-SM, SC-SM, SM	A-2-4, A-1-b	0	0	95-100	90-100	50-95	5-35	0-20	NP-4
	72-80	Sand, fine sand	SP-SM, SM, SP	A-2-4, A-1-b	0	0	95-100	90-100	50-95	2-20	0-17	NP-2
Pillot-----	0-8	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	90-100	85-100	85-100	25-40	10-20
	15-32	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	32-36	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	36-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
1442C2:												
Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
1442C2: Sparta, moderately eroded-----	0-8	Loamy fine sand	SM	A-4, A-2	0	0	85-100	85-100	50-95	15-50	0-14	NP
	8-66	Loamy fine sand, fine sand, sand	SP-SM, SM	A-3, A-2, A-4	0	0	85-100	85-100	50-95	5-50	0-14	NP
	66-80	Fine sand, sand, loamy fine sand	SM, SP, SP-SM	A-2, A-3	0	0	85-100	85-100	50-95	2-30	0-14	NP
Pillot, moderately eroded-----	0-8	Silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	26-30	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	30-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
1442D2: Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
Sparta, moderately eroded-----	0-8	Loamy fine sand	SM	A-4, A-2	0	0	85-100	85-100	50-95	15-50	0-14	NP
	8-66	Loamy fine sand, fine sand, sand	SP-SM, SM	A-3, A-2, A-4	0	0	85-100	85-100	50-95	5-50	0-14	NP
	66-80	Fine sand, sand, loamy fine sand	SM, SP, SP-SM	A-2, A-3	0	0	85-100	85-100	50-95	2-30	0-14	NP
Pillot, moderately eroded-----	0-8	Silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	26-30	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	30-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
1442E2: Tama, moderately eroded-----	0-8	Silt loam, silty clay loam	ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	26-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
Sparta, moderately eroded-----	0-8	Loamy fine sand	SM	A-4, A-2	0	0	85-100	85-100	50-95	15-50	0-14	NP
	8-66	Loamy fine sand, fine sand, sand	SP-SM, SM	A-3, A-2, A-4	0	0	85-100	85-100	50-95	5-50	0-14	NP
	66-80	Fine sand, sand, loamy fine sand	SM, SP, SP-SM	A-2, A-3	0	0	85-100	85-100	50-95	2-30	0-14	NP
Pillot, moderately eroded-----	0-8	Silty clay loam	ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-20
	8-26	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	90-100	70-100	50-100	30-45	10-25
	26-30	Loam, sandy loam, sandy clay loam	SC-SM, CL-ML, SC, CL	A-4, A-2, A-6	0	0	100	90-100	55-95	25-75	20-35	4-14
	30-60	Loamy sand, sand, sandy loam	SC-SM, SM, SP-SM	A-1, A-3, A-2	0	0-5	75-100	75-100	25-70	5-25	15-25	NP-5
1540: Quiver, frequently flooded-----	0-9	Silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	85-100	20-45	15-25
	9-65	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	90-100	60-100	20-45	10-25
Zook, frequently flooded-----	0-8	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	8-38	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	38-52	Silty clay, silty clay loam	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-55
	52-60	Silty clay loam, silty clay, silt loam	CH, CL, MH, ML	A-6, A-7	0	0	100	100	95-100	95-100	35-80	10-50

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
1540: Klum, frequently flooded-----	0-8	Fine sandy loam, loam	CL-ML, SC-SM, SM	A-4	0	0	100	95-100	70-90	40-55	20-35	3-10
	8-60	Stratified sandy loam to loam	CL-ML, SC-SM, SP-SM, SC	A-2, A-4	0	0	100	95-100	70-95	10-70	15-30	NP-10
2219: Ella, rarely flooded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	85-90	25-35	6-15
	8-55	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	90-100	85-95	25-40	7-20
	55-72	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9
	72-80	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9
2219B: Ella, rarely flooded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	85-90	25-35	6-15
	8-55	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	90-100	85-95	25-40	7-20
	55-72	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9
	72-80	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9
2219C2: Ella, moderately eroded-----	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	85-90	25-35	6-15
	8-46	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	90-100	85-95	25-40	7-20
	46-72	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9
	72-80	Stratified silty clay loam to sandy loam	CL, CL-ML, SC, SC-SM	A-4	0	0	100	100	65-100	35-75	20-28	4-9

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
2422: Amana, occasionally flooded-----												
	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	15-37	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	37-48	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	48-80	Silt loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20
Nodaway, occasionally flooded-----												
	0-7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
	31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-100	25-40	5-15
	42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
Lawson, occasionally flooded-----												
	0-8	Silt loam	CL-ML, CL	A-6, A-4	0	0	100	100	90-100	85-100	20-40	5-20
	8-30	Silt loam, silty clay loam	CL, CL-ML	A-4	0	0	100	100	90-100	85-100	20-30	5-10
	30-80	Silty clay loam, silt loam	SC, CL-ML, SC-SM, CL	A-4, A-6	0	0	100	100	60-100	35-85	20-35	5-20
4946: Udorthents.												
Interstate highway.												
5010. Pits, sand and gravel												
5040. Udorthents												

Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10	4	10	40	200		
					inches	inches						
	In				Pct	Pct					Pct	
6220: Nodaway, frequently flooded-----												
	0-7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
	31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-100	25-40	5-15
	42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	94-100	88-100	84-99	25-40	5-15
6422: Amana, frequently flooded-----												
	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	8-15	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	25-40	10-20
	15-37	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	37-48	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	90-95	35-45	15-25
	48-80	Silt loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20
AW. Animal waste lagoon												
SL. Sewage lagoon												
W. Water												

Physical Properties

The table described in this section shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $1/3$ - or $1/10$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $1/3$ - or $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (K_w and K_f) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor K_f indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
5B:													
Ackmore-----	45	0-8	18-27	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-4.0	.32	.32	5	6	48
		8-25	18-27	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32			
		25-60	26-38	1.30-1.40	0.6-2	0.18-0.20	6.0-8.9	3.0-5.0	.32	.32			
Colo-----	35	0-8	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	6	38
		8-40	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		40-46	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		46-60	25-35	1.35-1.45	0.6-2	0.18-0.20	2.6-5.8	1.0-2.0	.32	.32			
7:													
Wiota, rarely flooded	100	0-8	24-32	1.30-1.35	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	5	7	48
		8-22	24-35	1.30-1.35	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28			
		22-48	30-36	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	2.0-3.0	.43	.43			
		48-64	25-34	1.40-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
7B:													
Wiota, rarely flooded	100	0-8	24-32	1.30-1.35	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	5	7	48
		8-22	24-35	1.30-1.35	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28			
		22-48	30-36	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	2.0-3.0	.43	.43			
		48-64	25-34	1.40-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
8B:													
Judson-----	95	0-8	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-5.0	.28	.28	5	7	38
		8-28	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28			
		28-52	30-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.43	.43			
		52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.0-1.0	.43	.43			
24C2:													
Shelby, moderately eroded-----	85	0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-11	30-35	1.50-1.55	0.2-0.6	0.16-0.18	3.0-5.9	1.0-2.0	.28	.28			
		11-42	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.28	.28			
		42-72	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.37	.37			
24D2:													
Shelby, moderately eroded-----	70	0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-11	30-35	1.50-1.55	0.2-0.6	0.16-0.18	3.0-5.9	1.0-2.0	.28	.28			
		11-42	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.28	.28			
		42-72	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
24D3: Shelby, severely eroded-----	90	In 0-8 8-36 36-72	Pct 27-35 30-35 30-35	g/cc 1.50-1.55 1.55-1.65 1.55-1.65	In/hr 0.2-0.6 0.2-0.6 0.2-0.6	In/in 0.16-0.18 0.16-0.18 0.16-0.18	Pct 3.2-5.8 3.0-5.9 3.0-5.9	Pct 1.0-2.0 0.0-1.0 0.0-0.5	.32 .28 .37	.32 .28 .37	5	6	48
24E2: Shelby, moderately eroded-----	85	0-8 8-11 11-42 42-72	18-27 30-35 30-35 30-35	1.50-1.55 1.50-1.55 1.55-1.65 1.55-1.65	0.2-0.6 0.2-0.6 0.2-0.6 0.2-0.6	0.16-0.18 0.16-0.18 0.16-0.18 0.16-0.18	3.2-5.8 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 1.0-2.0 0.0-1.0 0.0-0.5	.32 .28 .28 .37	.32 .28 .28 .37	5	6	48
24E3: Shelby, severely eroded-----	95	0-8 8-36 36-72	27-35 30-35 30-35	1.50-1.55 1.55-1.65 1.55-1.65	0.2-0.6 0.2-0.6 0.2-0.6	0.16-0.18 0.16-0.18 0.16-0.18	3.2-5.8 3.0-5.9 3.0-5.9	1.0-2.0 0.0-1.0 0.0-0.5	.32 .28 .37	.32 .28 .37	5	6	48
41: Sparta-----	100	0-8 8-15 15-72 72-80	3-10 3-10 1-8 0-5	1.20-1.40 1.20-1.40 1.40-1.60 1.50-1.70	2-6 2-6 6-20 6-20	0.09-0.12 0.09-0.12 0.05-0.11 0.04-0.07	0.0-0.0 0.0-0.0 0.0-0.0 0.0-0.0	1.0-2.0 1.0-2.0 0.0-0.5 0.0-0.5	.17 .17 .15 .15	.17 .17 .15 .15	5	2	134
41B: Sparta-----	100	0-8 8-15 15-72 72-80	3-10 3-10 1-8 0-5	1.20-1.40 1.20-1.40 1.40-1.60 1.50-1.70	2-6 2-6 6-20 6-20	0.09-0.12 0.09-0.12 0.05-0.11 0.04-0.07	0.0-0.0 0.0-0.0 0.0-0.0 0.0-0.0	1.0-2.0 1.0-2.0 0.0-0.5 0.0-0.5	.17 .17 .15 .15	.17 .17 .15 .15	5	2	134
41C: Sparta-----	85	0-8 8-15 15-72 72-80	3-10 3-10 1-8 0-5	1.20-1.40 1.20-1.40 1.40-1.60 1.50-1.70	2-6 2-6 6-20 6-20	0.09-0.12 0.09-0.12 0.05-0.11 0.04-0.07	0.0-0.0 0.0-0.0 0.0-0.0 0.0-0.0	1.0-2.0 1.0-2.0 0.0-0.5 0.0-0.5	.17 .17 .15 .15	.17 .17 .15 .15	5	2	134
41D: Sparta-----	75	0-8 8-15 15-72 72-80	3-10 3-10 1-8 0-5	1.20-1.40 1.20-1.40 1.40-1.60 1.50-1.70	2-6 2-6 6-20 6-20	0.09-0.12 0.09-0.12 0.05-0.11 0.04-0.07	0.0-0.0 0.0-0.0 0.0-0.0 0.0-0.0	1.0-2.0 1.0-2.0 0.0-0.5 0.0-0.5	.17 .17 .15 .15	.17 .17 .15 .15	5	2	134

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
43: Bremer, rarely flooded	100	0-8	27-36	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.32	.32	5	7	38
		8-19	27-36	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.32	.32			
		19-42	35-42	1.30-1.40	0.2-0.6	0.15-0.17	6.0-8.9	1.0-2.0	.43	.43			
		42-60	32-38	1.40-1.45	0.2-0.6	0.18-0.20	6.0-8.9	0.5-1.0	.43	.43			
51: Vesser, occasionally flooded-----	95	0-8	20-26	1.30-1.35	0.6-2	0.20-0.24	1.0-2.9	2.0-3.0	.28	.28	5	6	48
		8-12	20-26	1.30-1.35	0.6-2	0.20-0.24	1.0-2.9	2.0-3.0	.28	.28			
		12-31	18-22	1.35-1.40	0.6-2	0.18-0.22	0.4-1.6	1.0-2.0	.43	.43			
		31-60	30-35	1.40-1.45	0.6-2	0.17-0.21	3.0-5.9	0.0-1.0	.43	.43			
54: Zook, occasionally flooded-----	100	0-8	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	7	38
		8-38	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37			
		38-52	36-45	1.30-1.45	0.06-0.2	0.11-0.13	6.0-8.9	2.0-4.0	.28	.28			
		52-60	20-45	1.30-1.45	0.06-0.6	0.11-0.22	6.0-8.9	0.0-1.0	.28	.28			
54+: Zook, occasionally flooded, overwash----	100	0-8	20-26	1.30-1.35	0.6-2	0.20-0.24	1.0-2.9	3.0-4.0	.28	.28	5	6	48
		8-14	20-26	1.30-1.35	0.6-2	0.20-0.24	1.0-2.9	3.0-4.0	.28	.28			
		14-38	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37			
		38-52	36-45	1.30-1.45	0.06-0.2	0.11-0.13	6.0-8.9	2.0-4.0	.28	.28			
		52-60	20-45	1.30-1.45	0.06-0.6	0.11-0.22	6.0-8.9	0.0-1.0	.28	.28			
63C: Chelsea-----	90	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
63E: Chelsea-----	95	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
63G: Chelsea-----	95	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
65D2: Lindley, moderately eroded-----	85	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-40	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		40-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65D3: Lindley, severely eroded-----	85	0-8	25-35	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-34	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		34-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65E2: Lindley, moderately eroded-----	85	0-8	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-40	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		40-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65E3: Lindley, severely eroded-----	85	0-8	25-35	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-34	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		34-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65F: Lindley-----	100	0-3	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		3-7	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32			
		7-46	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-1.0	.32	.32			
		46-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65F2: Lindley, moderately eroded-----	80	0-8	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-40	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		40-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
65F3: Lindley, severely eroded-----	90	0-8	25-35	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-34	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		34-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
65G: Lindley-----	100	0-3	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		3-7	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32			
		7-46	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-1.0	.32	.32			
		46-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
75: Givin-----	95	0-8	18-26	1.30-1.40	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-16	18-26	1.30-1.40	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		16-42	36-42	1.30-1.45	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		42-80	27-34	1.40-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
76B: Ladoga-----	95	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-14	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		14-45	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		45-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
76C: Ladoga-----	85	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-14	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		14-45	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		45-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
76C2: Ladoga, moderately eroded-----	95	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	7	38
		8-10	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		10-39	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		39-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
76D: Ladoga-----	90	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-14	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		14-45	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		45-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
76D2: Ladoga, moderately eroded-----	90	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	7	38
		8-10	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		10-39	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		39-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
76D3: Ladoga, severely eroded-----	85	In 0-8 8-33 33-60	Pct 24-32 36-42 24-32	g/cc 1.30-1.35 1.30-1.40 1.35-1.45	In/hr 0.6-2 0.2-0.6 0.6-2	In/in 0.22-0.24 0.18-0.20 0.18-0.20	Pct 0.0-2.9 6.1-8.0 0.4-4.8	Pct 1.0-2.0 0.5-1.0 0.0-0.5	.32 .43 .43	.32 .43 .43	5	6	48
76E2: Ladoga, moderately eroded-----	70	0-8 8-10 10-39 39-60	18-27 18-27 36-42 24-32	1.30-1.35 1.30-1.35 1.30-1.40 1.35-1.45	0.6-2 0.6-2 0.2-0.6 0.6-2	0.22-0.24 0.22-0.24 0.18-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.1-8.0 0.4-4.8	2.0-3.0 0.5-1.0 0.5-1.0 0.0-0.5	.32 .32 .43 .43	.32 .32 .43 .43	5	6	48
76E3: Ladoga, severely eroded-----	85	0-8 8-33 33-60	24-32 36-42 24-32	1.30-1.35 1.30-1.40 1.35-1.45	0.6-2 0.2-0.6 0.6-2	0.22-0.24 0.18-0.20 0.18-0.20	0.0-2.9 6.1-8.0 0.4-4.8	1.0-2.0 0.5-1.0 0.0-0.5	.32 .43 .43	.32 .43 .43	5	6	48
80B: Clinton-----	100	0-8 8-15 15-72 72-80	16-26 16-26 36-42 24-35	1.30-1.40 1.30-1.40 1.35-1.45 1.40-1.55	0.6-2 0.6-2 0.2-0.6 0.6-2	0.20-0.22 0.20-0.22 0.16-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.1-8.0 3.0-5.9	2.0-3.0 0.5-1.5 0.0-1.0 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	5	6	48
80C: Clinton-----	95	0-8 8-15 15-72 72-80	16-26 16-26 36-42 24-35	1.30-1.40 1.30-1.40 1.35-1.45 1.40-1.55	0.6-2 0.6-2 0.2-0.6 0.6-2	0.20-0.22 0.20-0.22 0.16-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.1-8.0 3.0-5.9	2.0-3.0 0.5-1.5 0.0-1.0 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	5	6	48
80C2: Clinton, moderately eroded-----	85	0-8 8-10 10-66 66-80	27-34 27-34 36-42 24-35	1.30-1.40 1.30-1.40 1.35-1.45 1.40-1.55	0.6-2 0.6-2 0.2-0.6 0.6-2	0.18-0.20 0.18-0.20 0.16-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.1-8.0 3.0-5.9	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	5	7	38
80D: Clinton-----	90	0-8 8-15 15-72 72-80	16-26 16-26 36-42 24-35	1.30-1.40 1.30-1.40 1.35-1.45 1.40-1.55	0.6-2 0.6-2 0.2-0.6 0.6-2	0.20-0.22 0.20-0.22 0.16-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.1-8.0 3.0-5.9	2.0-3.0 0.5-1.5 0.0-1.0 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	5	6	48

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility	Wind erodi- bility
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct				group	index
80D2: Clinton, moderately eroded-----	85	0-8	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	1.0-2.0	.37	.37	5	7	38
		8-10	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	0.2-0.5	.37	.37			
		10-66	36-42	1.35-1.45	0.2-0.6	0.16-0.20	6.1-8.0	0.0-0.5	.37	.37			
		66-80	24-35	1.40-1.55	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.37	.37			
80D3: Clinton, severely eroded-----	75	0-8	27-34	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	0.5-2.0	.43	.43	4	7	38
		8-60	36-42	1.35-1.45	0.2-0.6	0.16-0.20	6.1-8.0	0.0-0.5	.37	.37			
		60-80	24-35	1.40-1.55	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.37	.37			
80E2: Clinton, moderately eroded-----	90	0-8	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
		8-10	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	0.0-0.5	.37	.37			
		10-66	36-42	1.35-1.45	0.2-0.6	0.16-0.20	6.1-8.0	0.0-0.5	.37	.37			
		66-80	24-35	1.40-1.55	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.37	.37			
80E3: Clinton, severely eroded-----	70	0-8	27-34	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	0.5-2.0	.43	.43	5	6	48
		8-60	36-42	1.35-1.45	0.2-0.6	0.16-0.20	6.1-8.0	0.0-0.5	.37	.37			
		60-80	24-35	1.40-1.55	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.37	.37			
80F2: Clinton, moderately eroded-----	90	0-8	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
		8-10	27-34	1.30-1.40	0.6-2	0.18-0.20	0.0-2.9	0.0-0.5	.37	.37			
		10-66	36-42	1.35-1.45	0.2-0.6	0.16-0.20	6.1-8.0	0.0-0.5	.37	.37			
		66-80	24-35	1.40-1.55	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.37	.37			
83B: Kenyon-----	75	0-8	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	3.0-4.0	.24	.24	5	6	48
		8-14	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	3.0-4.0	.24	.24			
		14-19	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	1.0-3.0	.24	.24			
		19-47	20-30	1.45-1.65	0.6-2	0.17-0.19	1.0-4.2	0.0-1.0	.28	.28			
		47-76	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			
83C: Kenyon-----	80	0-8	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	3.0-4.0	.24	.24	5	6	48
		8-14	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	3.0-4.0	.24	.24			
		14-19	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	1.0-3.0	.24	.24			
		19-47	20-30	1.45-1.65	0.6-2	0.17-0.19	1.0-4.2	0.0-1.0	.28	.28			
		47-76	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
83C2: Kenyon, moderately eroded-----	85	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	2.0-3.0	.24	.24	5	6	48
		8-14	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	0.0-1.0	.24	.24			
		14-35	20-30	1.45-1.65	0.6-2	0.17-0.19	1.0-4.2	0.0-1.0	.28	.28			
		35-41	20-24	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-0.5	.37	.37			
		41-76	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			
83D2: Kenyon, moderately eroded-----	80	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	2.0-3.0	.24	.24	5	6	48
		8-14	18-26	1.40-1.45	0.6-2	0.20-0.22	0.4-2.9	0.0-1.0	.24	.24			
		14-35	20-30	1.45-1.65	0.6-2	0.17-0.19	1.0-4.2	0.0-1.0	.28	.28			
		35-41	20-24	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-0.5	.37	.37			
		41-76	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			
88: Nevin, rarely flooded	90	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	27-29	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28	5	7	38
		8-30	27-29	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28			
		30-46	30-35	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		46-62	25-36	1.40-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
93D2: Shelby, moderately eroded-----	50	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	18-28	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-11	30-35	1.50-1.55	0.2-0.6	0.16-0.18	3.0-5.9	1.0-2.0	.28	.28			
		11-42	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.28	.28			
		42-72	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.37	.37			
Adair, moderately eroded-----	35	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-3.0	.28	.28	3	4	86
		8-16	38-60	1.55-1.60	0.06-0.2	0.13-0.16	6.7-13.7	0.5-1.0	.32	.32			
		16-41	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			
		41-80	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			
93D3: Shelby, severely eroded-----	50	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	27-35	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	1.0-2.0	.32	.32	4	6	48
		8-36	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.28	.28			
		36-72	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.37	.37			
Adair, severely eroded	30	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	1.0-2.0	.28	.28	2	4	86
		8-16	38-60	1.55-1.60	0.06-0.2	0.13-0.16	6.7-13.7	0.0-0.5	.32	.32			
		16-35	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			
		35-80	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
93E2: Shelby, moderately eroded-----	60	0-8	18-28	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-11	30-35	1.50-1.55	0.2-0.6	0.16-0.18	3.0-5.9	1.0-2.0	.28	.28			
		11-42	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-1.0	.28	.28			
		42-72	30-35	1.55-1.65	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.37	.37			
Adair, moderately eroded-----	35	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-3.0	.28	.28	3	6	86
		8-16	38-60	1.55-1.60	0.06-0.2	0.13-0.16	6.7-13.7	0.5-1.0	.32	.32			
		16-41	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			
		41-80	30-38	1.60-1.70	0.2-0.6	0.14-0.16	4.2-6.7	0.0-0.5	.32	.32			
119: Muscatine-----	95	0-8	28-30	1.30-1.35	0.6-2	0.22-0.24	4.1-5.5	4.0-6.0	.28	.28	5	7	38
		8-20	28-30	1.30-1.35	0.6-2	0.22-0.24	5.0-5.5	4.0-6.0	.28	.28			
		20-42	30-35	1.28-1.35	0.6-2	0.18-0.20	5.5-6.8	1.0-2.0	.43	.43			
		42-64	22-30	1.35-1.40	0.6-2	0.18-0.20	3.5-5.5	0.5-1.0	.43	.43			
120B: Tama-----	95	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	7	38
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
120C: Tama-----	85	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	7	38
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
120C2: Tama, moderately eroded-----	75	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	7	38
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
120D2: Tama, moderately eroded-----	85	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	7	38
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
120D3: Tama, severely eroded	80	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.28	.28	4	7	38
		8-20	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		20-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
120E2: Tama, moderately eroded-----	80	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	7	38
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
122: Sperry-----	95	0-8	18-22	1.35-1.40	0.6-2	0.22-0.24	0.4-1.6	3.0-4.0	.37	.37	3	6	48
		8-10	18-22	1.35-1.40	0.6-2	0.22-0.24	0.4-1.6	3.0-4.0	.37	.37			
		10-17	18-22	1.35-1.40	0.6-2	0.22-0.24	0.4-1.6	0.5-1.0	.43	.43			
		17-28	38-45	1.40-1.45	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.43	.43			
		28-47	26-34	1.45-1.50	0.2-0.6	0.19-0.21	2.6-5.8	0.0-1.0	.43	.43			
		47-80	26-34	1.45-1.50	0.2-0.6	0.19-0.21	2.6-5.8	0.0-0.5	.43	.43			
133: Colo, occasionally flooded-----	90	0-8	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	7	38
		8-40	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		40-46	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		46-60	25-35	1.35-1.45	0.6-2	0.18-0.20	2.6-5.8	1.0-2.0	.32	.32			
133+: Colo, occasionally flooded, overwash----	90	0-8	20-26	1.25-1.30	0.6-2	0.22-0.24	1.0-2.9	3.0-5.0	.28	.28	5	6	48
		8-14	20-26	1.25-1.30	0.6-2	0.22-0.24	1.0-2.9	3.0-5.0	.28	.28			
		14-40	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	4.0-6.0	.28	.28			
		40-46	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		46-60	25-35	1.35-1.45	0.6-2	0.18-0.20	2.6-5.8	1.0-2.0	.32	.32			
162B: Downs-----	95	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-17	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	0.5-1.5	.32	.32			
		17-39	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		39-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
162C: Downs-----	85	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-17	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	0.5-1.5	.32	.32			
		17-39	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		39-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
162C2: Downs, moderately eroded-----	85	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-33	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		33-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
162D2: Downs, moderately eroded-----	85	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-33	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		33-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
162D3: Downs, severely eroded	80	0-8	18-30	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.0	.32	.32	4	7	38
		8-27	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		27-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
162E2: Downs, moderately eroded-----	75	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-33	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		33-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
162E3: Downs, severely eroded	75	0-8	18-30	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.0	.32	.32	4	7	38
		8-27	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		27-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163B: Fayette-----	95	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163C: Fayette-----	90	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163C2: Fayette, moderately eroded-----	85	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
163D: Fayette-----	85	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163D2: Fayette, moderately eroded-----	65												
		0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163D3: Fayette, severely eroded-----	60												
		0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	4	7	38
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163E: Fayette-----	75												
		0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163E2: Fayette, moderately eroded-----	70												
		0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163E3: Fayette, severely eroded-----	70												
		0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	4	6	48
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163F: Fayette-----	75												
		0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
163F2: Fayette, moderately eroded-----	70	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163F3: Fayette, severely eroded-----	70	0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	4	7	38
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
163G: Fayette-----	85	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
165: Stronghurst-----	95	0-8	20-27	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	5	6	48
		8-11	20-27	1.25-1.45	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.37	.37			
		11-15	24-35	1.30-1.55	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.37	.37			
		15-47	24-35	1.30-1.55	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.37	.37			
		47-60	20-27	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.5-1.0	.37	.37			
171C2: Bassett, moderately eroded-----	85	0-8	18-25	1.45-1.50	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.28	.28	5	6	48
		8-53	20-28	1.55-1.65	0.6-2	0.17-0.19	0.0-2.9	0.5-1.0	.28	.28			
		53-73	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			
171D2: Bassett, moderately eroded-----	80	0-8	18-25	1.45-1.50	0.6-2	0.19-0.21	0.0-2.9	2.0-4.0	.28	.28	5	6	48
		8-53	20-28	1.55-1.65	0.6-2	0.17-0.19	0.0-2.9	0.5-1.0	.28	.28			
		53-73	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			
171D3: Bassett, severely eroded-----	75	0-8	18-25	1.45-1.50	0.6-2	0.19-0.21	0.0-2.9	1.0-2.0	.28	.28	5	6	48
		8-47	20-28	1.55-1.65	0.6-2	0.17-0.19	0.0-2.9	0.5-1.0	.28	.28			
		47-73	20-24	1.75-1.90	0.6-2	0.17-0.19	0.0-2.9	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
171E2: Bassett, moderately eroded-----	80	In 0-8 8-53 53-73	Pct 18-25 20-28 20-24	g/cc 1.45-1.50 1.55-1.65 1.75-1.90	In/hr 0.6-2 0.6-2 0.6-2	In/in 0.19-0.21 0.17-0.19 0.17-0.19	Pct 0.0-2.9 0.0-2.9 0.0-2.9	Pct 2.0-4.0 0.5-1.0 0.0-0.5	.28 .28 .37	.28 .28 .37	5	6	48
171E3: Bassett, severely eroded-----	75	0-8 8-47 47-73	18-25 20-28 20-24	1.45-1.50 1.55-1.65 1.75-1.90	0.6-2 0.6-2 0.6-2	0.19-0.21 0.17-0.19 0.17-0.19	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.5-1.0 0.0-0.5	.28 .28 .37	.28 .28 .37	5	6	48
172: Wabash, occasionally flooded-----	100	0-8 8-19 19-60	40-46 40-60 40-60	1.25-1.45 1.20-1.45 1.20-1.45	0.0015-0.06 0.0015-0.06 0.0015-0.06	0.12-0.14 0.08-0.12 0.08-0.12	6.7-10.5 9.0-25.0 9.0-25.0	2.0-4.0 2.0-4.0 1.0-2.0	.28 .28 .28	.28 .28 .28	5	4	86
175: Dickinson-----	100	0-9 9-18 18-30 30-36 36-60	10-18 10-18 10-18 10-15 4-10	1.50-1.55 1.50-1.55 1.50-1.55 1.45-1.55 1.60-1.70	2-6 2-6 2-6 2-6 6-20	0.12-0.15 0.12-0.15 0.12-0.15 0.12-0.15 0.02-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5 0.0-0.5	.20 .20 .20 .24 .15	.20 .20 .20 .24 .15	4	3	86
175B: Dickinson-----	95	0-9 9-18 18-30 30-36 36-60	10-18 10-18 10-18 10-15 4-10	1.50-1.55 1.50-1.55 1.50-1.55 1.45-1.55 1.60-1.70	2-6 2-6 2-6 2-6 6-20	0.12-0.15 0.12-0.15 0.12-0.15 0.12-0.15 0.02-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5 0.0-0.5	.20 .20 .20 .24 .15	.20 .20 .20 .24 .15	4	3	86
175C: Dickinson-----	85	0-9 9-18 18-30 30-36 36-60	10-18 10-18 10-18 10-15 4-10	1.50-1.55 1.50-1.55 1.50-1.55 1.45-1.55 1.60-1.70	2-6 2-6 2-6 2-6 6-20	0.12-0.15 0.12-0.15 0.12-0.15 0.12-0.15 0.02-0.04	0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.5-1.0 0.5-1.0 0.0-0.5 0.0-0.5	.20 .20 .20 .24 .15	.20 .20 .20 .24 .15	4	3	86
178: Waukee-----	90	0-8 8-16 16-20 20-35 35-44 44-66	18-24 18-24 18-27 18-27 2-8 2-8	1.40-1.45 1.40-1.45 1.40-1.45 1.40-1.50 1.50-1.75 1.50-1.75	0.6-2 0.6-2 0.6-2 0.6-2 6-20 6-20	0.20-0.22 0.20-0.22 0.15-0.19 0.15-0.19 0.02-0.06 0.02-0.06	0.4-2.3 0.4-2.3 0.4-3.2 0.4-3.2 0.0-0.0 0.0-0.0	3.0-4.0 3.0-4.0 1.0-2.0 1.0-2.0 0.0-1.0 0.0-1.0	.24 .24 .28 .28 .10 .17	.24 .24 .28 .28 .17 .17	4	6	48

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
178B:													
Waukee-----	100	0-8	18-24	1.40-1.45	0.6-2	0.20-0.22	0.4-2.3	3.0-4.0	.24	.24	4	6	48
		8-16	18-24	1.40-1.45	0.6-2	0.20-0.22	0.4-2.3	3.0-4.0	.24	.24			
		16-20	18-27	1.40-1.45	0.6-2	0.15-0.19	0.4-3.2	1.0-2.0	.28	.28			
		20-35	18-27	1.40-1.50	0.6-2	0.15-0.19	0.4-3.2	1.0-2.0	.28	.28			
		35-44	2-8	1.50-1.75	6-20	0.02-0.06	0.0-0.0	0.0-1.0	.10	.17			
		44-66	2-8	1.50-1.75	6-20	0.02-0.06	0.0-0.0	0.0-1.0	.10	.17			
178C:													
Waukee-----	100	0-8	18-24	1.40-1.45	0.6-2	0.20-0.22	0.4-2.3	3.0-4.0	.24	.24	4	6	48
		8-16	18-24	1.40-1.45	0.6-2	0.20-0.22	0.4-2.3	3.0-4.0	.24	.24			
		16-20	18-27	1.40-1.45	0.6-2	0.15-0.19	0.4-3.2	1.0-2.0	.28	.28			
		20-35	18-27	1.40-1.50	0.6-2	0.15-0.19	0.4-3.2	1.0-2.0	.28	.28			
		35-44	2-8	1.50-1.75	6-20	0.02-0.06	0.0-0.0	0.0-1.0	.10	.17			
		44-66	2-8	1.50-1.75	6-20	0.02-0.06	0.0-0.0	0.0-1.0	.10	.17			
179D2:													
Gara, moderately eroded-----	80	0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
179D3:													
Gara, severely eroded	70	0-8	27-35	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	1.0-2.0	.32	.32	4	6	48
		8-21	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		21-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
179E2:													
Gara, moderately eroded-----	85	0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
179E3:													
Gara, severely eroded	75	0-8	27-35	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	1.0-2.0	.32	.32	4	6	48
		8-21	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		21-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
179F2:													
Gara, moderately eroded-----	85	0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
179F3: Gara, severely eroded	90	In 0-8 8-21 21-60	Pct 27-35 25-38 24-38	g/cc 1.50-1.55 1.55-1.75 1.65-1.75	In/hr 0.2-0.6 0.2-0.6 0.2-0.6	In/in 0.16-0.18 0.16-0.18 0.16-0.18	Pct 3.2-5.8 3.0-5.9 3.2-5.8	Pct 1.0-2.0 0.0-0.5 0.0-0.5	.32 .32 .37	.32 .32 .37	4	6	48
180: Keomah-----	95	0-8 8-18 18-53 53-80	16-26 16-26 35-42 24-38	1.30-1.40 1.35-1.45 1.30-1.45 1.40-1.55	0.6-2 0.2-0.6 0.06-0.6 0.2-0.6	0.22-0.24 0.18-0.20 0.18-0.20 0.18-0.20	0.0-2.9 0.0-2.9 6.0-8.9 3.0-5.9	1.0-3.0 1.0-3.0 0.5-1.0 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	3	6	48
192D2: Adair, moderately eroded-----	75	0-8 8-16 16-41 41-80	28-34 38-60 30-38 30-38	1.25-1.35 1.55-1.60 1.60-1.70 1.60-1.70	0.6-2 0.06-0.2 0.2-0.6 0.2-0.6	0.21-0.23 0.13-0.16 0.14-0.16 0.14-0.16	3.2-5.8 6.7-13.7 4.2-6.7 4.2-6.7	2.0-3.0 0.5-1.0 0.0-0.5 0.0-0.5	.28 .32 .32 .32	.28 .32 .32 .32	3	4	86
192D3: Adair, severely eroded	70	0-8 8-16 16-35 35-80	28-34 38-60 30-38 30-38	1.25-1.35 1.55-1.60 1.60-1.70 1.60-1.70	0.6-2 0.06-0.2 0.2-0.6 0.2-0.6	0.21-0.23 0.13-0.16 0.14-0.16 0.14-0.16	3.2-5.8 6.7-13.7 4.2-6.7 4.2-6.7	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.28 .32 .32 .32	.28 .32 .32 .32	2	4	86
220: Nodaway, occasionally flooded-----	85	0-7 7-31 31-42 42-80	18-27 18-28 18-30 18-28	1.25-1.35 1.25-1.35 1.25-1.35 1.25-1.35	0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.23 0.20-0.23 0.20-0.23 0.20-0.23	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 0.0-0.5 0.0-0.5 0.0-0.5	.32 .43 .43 .43	.32 .43 .43 .43	5	6	48
279: Taintor-----	90	0-9 9-20 20-28 28-36 36-60	27-36 30-36 35-44 35-44 24-34	1.30-1.40 1.30-1.40 1.30-1.45 1.30-1.45 1.40-1.50	0.2-0.6 0.2-0.6 0.2-0.6 0.2-0.6 0.6-2	0.21-0.23 0.21-0.23 0.14-0.18 0.14-0.18 0.18-0.20	3.0-5.9 4.2-6.1 6.0-8.9 6.0-8.9 2.3-5.4	5.0-6.0 2.0-3.0 0.0-1.0 0.0-1.0 0.0-1.0	.28 .32 .43 .43 .43	.28 .32 .43 .43 .43	5	7	38
280: Mahaska-----	95	0-8 8-24 24-30 30-61 61-80	27-32 27-32 36-42 36-42 24-32	1.30-1.40 1.30-1.40 1.30-1.45 1.30-1.45 1.40-1.45	0.6-2 0.6-2 0.6-2 0.6-2 0.6-2	0.21-0.23 0.21-0.23 0.14-0.18 0.14-0.18 0.18-0.20	3.0-5.9 3.0-5.9 6.1-8.0 6.1-8.0 0.4-4.8	4.0-6.0 3.0-5.0 1.0-2.0 1.0-2.0 0.0-1.0	.28 .28 .43 .43 .43	.28 .28 .43 .43 .43	5	7	38

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
281B: Otley-----	100	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	3.0-4.0	.28	.28	5	7	38
		8-17	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-4.0	.28	.28			
		17-61	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	1.0-2.0	.43	.43			
		61-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
281C: Otley-----	90	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	3.0-4.0	.28	.28	5	7	38
		8-17	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	3.0-4.0	.28	.28			
		17-61	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	1.0-2.0	.43	.43			
		61-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
281C2: Otley, moderately eroded-----	85	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-3.0	.28	.28	5	7	38
		8-55	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	0.0-1.0	.43	.43			
		55-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
281D2: Otley, moderately eroded-----	80	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-3.0	.28	.28	5	7	38
		8-55	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	0.0-1.0	.43	.43			
		55-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
281D3: Otley, severely eroded	80	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	1.0-2.0	.28	.28	4	7	38
		8-49	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	0.0-1.0	.43	.43			
		49-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
281E2: Otley, moderately eroded-----	85	0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	2.0-3.0	.28	.28	5	7	38
		8-55	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	0.0-1.0	.43	.43			
		55-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
291: Atterberry-----	90	0-8	20-26	1.35-1.55	0.6-2	0.22-0.25	0.0-2.9	2.0-4.0	.32	.32	5	6	48
		8-17	15-26	1.40-1.60	0.6-2	0.21-0.24	0.0-2.9	0.5-1.0	.32	.32			
		17-48	25-35	1.40-1.60	0.6-2	0.14-0.24	3.0-5.9	0.1-0.5	.43	.43			
		48-60	18-27	1.40-1.65	0.6-2	0.14-0.24	0.0-2.9	0.1-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
293C:		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Fayette-----	45	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
Tell-----	20	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
293D:													
Fayette-----	45	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
Tell-----	20	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
293D2:													
Fayette, moderately eroded-----	45	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	2	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea, moderately eroded-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.2-1.0	.17	.17	5	2	134
		4-30	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		30-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
293D2: Tell, moderately eroded-----	20	0-8	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.37	.37	4	5	56
		8-12	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		12-22	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		22-26	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		26-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
293E: Fayette-----	40	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
Tell-----	25	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
293E2: Fayette, moderately eroded-----	40	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	2	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea, moderately eroded-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.2-1.0	.17	.17	5	2	134
		4-30	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		30-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
Tell, moderately eroded-----	25	0-8	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.37	.37	4	5	56
		8-12	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		12-22	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		22-26	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		26-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
293G:		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Fayette-----	40	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	2	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Chelsea-----	35	0-4	8-15	1.50-1.55	6-20	0.10-0.15	0.0-0.0	0.5-1.0	.17	.17	5	2	134
		4-36	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
		36-70	5-10	1.55-1.70	6-20	0.06-0.08	0.0-0.0	0.0-0.5	.17	.17			
Tell-----	25	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
353B:													
Tell-----	85	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
353C:													
Tell-----	90	0-9	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.37	.37	4	5	56
		9-18	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		18-28	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		28-32	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		32-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
353C2:													
Tell, moderately eroded-----	90	0-8	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.37	.37	4	5	56
		8-12	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		12-22	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		22-26	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		26-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			
353D2:													
Tell, moderately eroded-----	90	0-8	14-18	1.35-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.37	.37	4	5	56
		8-12	20-28	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		12-22	20-30	1.50-1.60	0.6-2	0.18-0.22	3.0-5.9	0.0-0.5	.37	.37			
		22-26	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		26-60	2-8	1.55-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.15			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
377B:		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Dinsdale-----	100	0-8	25-29	1.25-1.30	0.6-2	0.21-0.23	2.6-3.9	3.0-5.0	.28	.28	5	7	38
		8-19	25-29	1.25-1.30	0.6-2	0.21-0.23	2.6-3.9	3.0-5.0	.28	.28			
		19-34	30-34	1.30-1.35	0.6-2	0.18-0.20	4.2-5.4	1.0-2.0	.43	.43			
		34-46	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-3.5	0.0-0.5	.43	.43			
		46-80	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-3.5	0.0-0.5	.43	.43			
377C:													
Dinsdale-----	85	0-8	25-29	1.25-1.30	0.6-2	0.21-0.23	2.6-3.9	3.0-5.0	.28	.28	5	7	38
		8-19	25-29	1.25-1.30	0.6-2	0.21-0.23	2.6-3.9	3.0-5.0	.28	.28			
		19-34	30-34	1.30-1.35	0.6-2	0.18-0.20	4.2-5.4	1.0-2.0	.43	.43			
		34-46	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-3.5	0.0-0.5	.43	.43			
		46-80	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-3.5	0.0-0.5	.43	.43			
420:													
Tama, terrace-----	100	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	7	48
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
420B:													
Tama, terrace-----	100	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
422:													
Amana, occasionally flooded-----	90	0-8	18-27	1.20-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-4.0	.28	.28	5	6	48
		8-15	18-27	1.20-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-4.0	.28	.28			
		15-37	18-30	1.25-1.40	0.6-2	0.20-0.22	1.6-2.9	1.0-2.0	.37	.37			
		37-48	18-30	1.25-1.40	0.6-2	0.20-0.22	1.6-2.9	1.0-2.0	.37	.37			
		48-80	18-26	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.37	.37			
424D2:													
Lindley, moderately eroded-----	50	0-8	18-27	1.20-1.40	0.6-2	0.16-0.18	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-40	25-35	1.40-1.60	0.2-0.6	0.14-0.18	2.6-5.8	0.0-0.5	.32	.32			
		40-60	18-32	1.45-1.65	0.2-0.6	0.12-0.16	0.4-4.8	0.0-0.5	.32	.32			
Keswick, moderately eroded-----	35	0-8	24-35	1.45-1.50	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.37	.37	3	4	86
		8-12	27-40	1.45-1.50	0.2-0.6	0.17-0.19	3.0-5.9	0.0-0.5	.37	.37			
		12-26	35-60	1.55-1.60	0.06-0.2	0.11-0.15	6.0-8.9	0.0-0.5	.37	.37			
		26-60	30-40	1.60-1.75	0.2-0.6	0.12-0.16	4.2-7.3	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
424E2: Lindley, moderately eroded-----	45	In 0-8 8-40 40-60	Pct 18-27 25-35 18-32	g/cc 1.20-1.40 1.40-1.60 1.45-1.65	In/hr 0.6-2 0.2-0.6 0.2-0.6	In/in 0.16-0.18 0.14-0.18 0.12-0.16	Pct 0.0-2.9 2.6-5.8 0.4-4.8	Pct 1.0-2.0 0.0-0.5 0.0-0.5	.32 .32 .32	.32 .32 .32	5	6	48
Keswick, moderately eroded-----	40	0-8 8-12 12-26 26-60	24-35 27-40 35-60 30-40	1.45-1.50 1.45-1.50 1.55-1.60 1.60-1.75	0.2-0.6 0.2-0.6 0.06-0.2 0.2-0.6	0.17-0.19 0.17-0.19 0.11-0.15 0.12-0.16	3.0-5.9 3.0-5.9 6.0-8.9 4.2-7.3	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	3	4	86
424E3: Lindley, severely eroded-----	45	0-8 8-34 34-60	25-35 25-35 18-32	1.20-1.40 1.40-1.60 1.45-1.65	0.6-2 0.2-0.6 0.2-0.6	0.16-0.18 0.14-0.18 0.12-0.16	0.0-2.9 2.6-5.8 0.4-4.8	1.0-2.0 0.0-0.5 0.0-0.5	.32 .32 .32	.32 .32 .32	5	6	48
Keswick, severely eroded-----	40	0-8 8-13 13-20 20-60	24-35 27-40 35-60 30-40	1.45-1.50 1.45-1.50 1.55-1.60 1.60-1.75	0.2-0.6 0.2-0.6 0.06-0.2 0.2-0.6	0.17-0.19 0.17-0.19 0.11-0.15 0.12-0.16	3.0-5.9 3.0-5.9 6.0-8.9 4.2-7.3	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	3	4	86
424F2: Lindley, moderately eroded-----	65	0-8 8-40 40-60	18-27 25-35 18-32	1.20-1.40 1.40-1.60 1.45-1.65	0.6-2 0.2-0.6 0.2-0.6	0.16-0.18 0.14-0.18 0.12-0.16	0.0-2.9 2.6-5.8 0.4-4.8	1.0-2.0 0.0-0.5 0.0-0.5	.32 .32 .32	.32 .32 .32	5	6	48
Keswick, moderately eroded-----	25	0-8 8-12 12-26 26-60	24-35 27-40 35-60 30-40	1.45-1.50 1.45-1.50 1.55-1.60 1.60-1.75	0.2-0.6 0.2-0.6 0.06-0.2 0.2-0.6	0.17-0.19 0.17-0.19 0.11-0.15 0.12-0.16	3.0-5.9 3.0-5.9 6.0-8.9 4.2-7.3	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	3	6	48
425D2: Keswick, moderately eroded-----	90	0-8 8-12 12-26 26-60	24-35 27-40 35-60 30-40	1.45-1.50 1.45-1.50 1.55-1.60 1.60-1.75	0.2-0.6 0.2-0.6 0.06-0.2 0.2-0.6	0.17-0.19 0.17-0.19 0.11-0.15 0.12-0.16	3.0-5.9 3.0-5.9 6.0-8.9 4.2-7.3	1.0-2.0 0.0-0.5 0.0-0.5 0.0-0.5	.37 .37 .37 .37	.37 .37 .37 .37	3	4	86

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
425D3: Keswick, severely eroded-----	60	0-8	24-35	1.45-1.50	0.2-0.6	0.17-0.19	3.0-5.9	1.0-2.0	.37	.37	2	4	86
		8-13	27-40	1.45-1.50	0.2-0.6	0.17-0.19	3.0-5.9	0.0-0.5	.37	.37			
		13-20	35-60	1.55-1.60	0.06-0.2	0.11-0.15	6.0-8.9	0.0-0.5	.37	.37			
		20-60	30-40	1.60-1.75	0.2-0.6	0.12-0.16	4.2-7.3	0.0-0.5	.37	.37			
428B: Ely-----	95	0-8	27-30	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28	5	7	38
		8-32	27-30	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28			
		32-47	28-35	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	1.0-3.0	.43	.43			
		47-80	20-30	1.40-1.45	0.6-2	0.18-0.20	1.0-4.2	0.5-1.0	.43	.43			
430: Ackmore, occasionally flooded-----	100	0-8	18-27	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-4.0	.32	.32	5	6	48
		8-25	18-27	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32			
		25-60	26-38	1.30-1.40	0.6-2	0.18-0.20	6.0-8.9	3.0-5.0	.32	.32			
450: Pillot-----	100	0-8	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32	5	6	48
		8-15	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32			
		15-32	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	1.0-2.0	.43	.43			
		32-36	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		36-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
450B: Pillot-----	90	0-8	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32	5	6	48
		8-15	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32			
		15-32	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	1.0-2.0	.43	.43			
		32-36	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		36-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
450C: Pillot-----	85	0-8	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32	5	6	48
		8-15	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32			
		15-32	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	1.0-2.0	.43	.43			
		32-36	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		36-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
453: Tuskeego, rarely flooded-----	75	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	16-22	1.35-1.40	0.6-2	0.19-0.23	3.0-5.9	2.0-4.0	.37	.37	5	6	56
		8-19	16-22	1.35-1.40	0.6-2	0.19-0.23	3.0-5.9	2.0-4.0	.37	.37			
		19-24	32-48	1.30-1.45	0.0015-0.06	0.13-0.17	6.0-8.9	0.0-2.0	.43	.43			
		24-60	28-40	1.40-1.50	0.06-0.2	0.16-0.19	3.0-5.9	0.0-1.0	.43	.43			
462B: Downs, terrace-----	90	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-17	18-26	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	0.5-1.5	.32	.32			
		17-39	26-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43			
		39-60	22-26	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463B: Fayette, terrace-----	100	0-3	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		3-14	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-1.5	.32	.32			
		14-34	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		34-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463C2: Fayette, moderately eroded, terrace-----	90	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463D2: Fayette, moderately eroded, terrace-----	90	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463D3: Fayette, severely eroded, terrace-----	80	0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	5	6	48
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463E2: Fayette, moderately eroded, terrace-----	90	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
463E3: Fayette, severely eroded, terrace-----	90	0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	5	6	48
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463F2: Fayette, moderately eroded, terrace-----	85	0-8	15-27	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.32	.32	5	6	48
		8-29	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		29-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
463F3: Fayette, severely eroded, terrace-----	90	0-8	18-30	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.5-2.0	.32	.32	5	6	48
		8-22	25-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
		22-73	22-26	1.45-1.50	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
484: Lawson, occasionally flooded-----	80	0-8	10-27	1.20-1.55	0.6-2	0.22-0.24	0.0-2.9	3.0-7.0	.28	.28	5	6	56
		8-30	10-30	1.20-1.55	0.6-2	0.18-0.22	0.0-2.9	3.0-7.0	.28	.28			
		30-60	18-30	1.50-1.70	0.6-2	0.11-0.15	3.0-5.9	1.0-4.0	.43	.43			
587: Chequest, occasionally flooded-----	95	0-8	30-35	1.30-1.35	0.2-0.6	0.18-0.20	6.0-8.9	3.0-4.0	.32	.32	5	7	38
		8-12	30-35	1.30-1.35	0.2-0.6	0.18-0.20	6.0-8.9	3.0-4.0	.32	.32			
		12-60	35-42	1.35-1.45	0.2-0.6	0.14-0.18	6.0-8.9	0.0-1.0	.43	.43			
587+: Chequest, occasionally flooded, overwash----	95	0-8	20-26	1.20-1.25	0.6-2	0.20-0.22	1.0-2.9	1.0-3.0	.37	.37	5	6	48
		8-12	20-26	1.20-1.25	0.6-2	0.20-0.22	1.0-2.9	1.0-3.0	.37	.37			
		12-24	20-26	1.20-1.25	0.6-2	0.20-0.22	1.0-2.9	3.0-4.0	.37	.37			
		24-60	35-42	1.35-1.45	0.2-0.6	0.14-0.18	6.0-8.9	0.0-1.0	.43	.43			
626: Hayfield-----	90	0-8	18-27	1.30-1.50	0.6-2	0.20-0.24	0.4-3.2	3.0-4.0	.32	.32	4	6	48
		8-13	18-27	1.30-1.50	0.6-2	0.20-0.24	0.4-3.2	0.5-1.0	.32	.32			
		13-29	18-30	1.40-1.55	0.6-2	0.17-0.22	0.4-4.2	0.0-1.0	.32	.32			
		29-80	0-10	1.55-1.65	6-20	0.02-0.04	0.0-0.0	0.0-0.5	.15	.15			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
663D2: Seaton, moderately eroded-----	85	In 0-8 8-38 38-80	Pct 15-22 18-27 10-25	g/cc 1.10-1.20 1.15-1.30 1.20-1.40	In/hr 0.6-2 0.6-2 0.6-2	In/in 0.22-0.24 0.20-0.22 0.20-0.22	Pct 0.0-2.9 0.0-2.9 0.0-2.9	Pct 1.0-2.0 0.0-0.5 0.0-0.5	.37 .37 .37	.37 .37 .37	5	6	56
663E2: Seaton, moderately eroded-----	85	0-8 8-38 38-80	15-22 18-27 10-25	1.10-1.20 1.15-1.30 1.20-1.40	0.6-2 0.6-2 0.6-2	0.22-0.24 0.20-0.22 0.20-0.22	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.0-0.5 0.0-0.5	.37 .37 .37	.37 .37 .37	5	6	56
663E3: Seaton, severely eroded-----	80	0-8 8-32 32-80	15-22 18-27 10-25	1.10-1.20 1.15-1.30 1.20-1.40	0.6-2 0.6-2 0.6-2	0.22-0.24 0.20-0.22 0.20-0.22	0.0-2.9 0.0-2.9 0.0-2.9	0.5-1.5 0.0-0.5 0.0-0.5	.37 .37 .37	.37 .37 .37	4	6	56
663F2: Seaton, moderately eroded-----	80	0-8 8-38 38-80	15-22 18-27 10-25	1.10-1.20 1.15-1.30 1.20-1.40	0.6-2 0.6-2 0.6-2	0.22-0.24 0.20-0.22 0.20-0.22	0.0-2.9 0.0-2.9 0.0-2.9	1.0-2.0 0.0-0.5 0.0-0.5	.37 .37 .37	.37 .37 .37	5	6	56
687: Watkins, rarely flooded-----	90	0-8 8-18 18-52 52-80	18-24 18-24 25-32 25-32	1.30-1.35 1.35-1.40 1.40-1.45 1.40-1.45	0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.24 0.15-0.19 0.14-0.18 0.14-0.18	3.0-5.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-4.0 1.0-2.0 1.0-2.0 0.0-1.0	.28 .43 .43 .43	.28 .43 .43 .43	5	6	48
687B: Watkins, rarely flooded-----	100	0-8 8-18 18-52 52-80	18-24 18-24 25-32 25-32	1.30-1.35 1.35-1.40 1.40-1.45 1.40-1.45	0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.24 0.15-0.19 0.14-0.18 0.14-0.18	3.0-5.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-4.0 1.0-2.0 1.0-2.0 0.0-1.0	.28 .43 .43 .43	.28 .43 .43 .43	5	6	48
688: Koszta, rarely flooded	95	0-8 8-13 13-21 28-35 21-48 48-60	18-24 18-24 28-35 28-35 28-35 28-35	1.30-1.40 1.30-1.40 1.30-1.45 1.30-1.45 1.30-1.45 1.30-1.45	0.6-2 0.6-2 0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.24 0.20-0.24 0.15-0.19 0.15-0.19 0.15-0.19 0.15-0.19	0.0-2.9 0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9 3.0-5.9	3.0-4.0 3.0-4.0 0.0-0.5 0.0-0.5 0.0-0.5 0.0-0.5	.28 .28 .43 .43 .43 .43	.28 .28 .43 .43 .43 .43	5	6	48

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
771B:													
Waubee-----	90	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.4-2.9	2.0-4.0	.28	.28	5	6	48
		8-13	18-26	1.25-1.30	0.6-2	0.21-0.23	0.4-2.9	2.0-4.0	.28	.28			
		13-29	25-34	1.25-1.35	0.6-2	0.18-0.20	2.6-3.9	1.0-2.0	.37	.37			
		29-45	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-0.5	.37	.37			
		45-80	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-0.5	.37	.37			
771C2:													
Waubee, moderately eroded-----	90	0-8	18-26	1.25-1.30	0.6-2	0.21-0.23	0.4-2.9	2.0-3.0	.28	.28	5	6	48
		8-23	25-34	1.25-1.35	0.6-2	0.18-0.20	2.6-3.9	0.0-1.0	.37	.37			
		23-28	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-1.0	.37	.37			
		28-80	20-28	1.65-1.75	0.6-2	0.17-0.19	1.0-2.3	0.0-0.5	.37	.37			
792D2:													
Armstrong, moderately eroded-----	75	0-8	27-35	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	2.0-3.0	.32	.32	3	4	86
		8-18	35-42	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.0-1.0	.32	.32			
		18-28	36-60	1.55-1.60	0.06-0.2	0.11-0.16	6.1-13.7	0.0-1.0	.32	.32			
		28-35	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-1.0	.32	.32			
		35-60	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-0.5	.32	.32			
876B:													
Ladoga, terrace-----	90	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-14	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		14-45	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		45-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
876C:													
Ladoga, terrace-----	80	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-14	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		14-45	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		45-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
876C2:													
Ladoga, moderately eroded, terrace-----	85	0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		8-10	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		10-39	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		39-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
876D2: Ladoga, moderately eroded, terrace-----	90	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
		0-8	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.32	.32	5	7	38
		8-10	18-27	1.30-1.35	0.6-2	0.22-0.24	0.0-2.9	0.5-1.0	.32	.32			
		10-39	36-42	1.30-1.40	0.2-0.6	0.18-0.20	6.1-8.0	0.5-1.0	.43	.43			
		39-60	24-32	1.35-1.45	0.6-2	0.18-0.20	0.4-4.8	0.0-0.5	.43	.43			
881B: Otley, terrace-----	95												
		0-8	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	3.0-4.0	.28	.28	5	7	38
		8-17	28-34	1.25-1.35	0.6-2	0.21-0.23	3.2-5.8	3.0-4.0	.28	.28			
		17-61	36-42	1.30-1.40	0.6-2	0.18-0.20	6.1-8.0	1.0-2.0	.43	.43			
		61-73	24-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
911B: Colo-----	55												
		0-8	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	7	48
		8-40	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		40-46	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
		46-60	25-35	1.35-1.45	0.6-2	0.18-0.20	2.6-5.8	1.0-2.0	.32	.32			
Ely-----	35												
		0-8	27-30	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28	5	7	38
		8-32	27-30	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28			
		32-47	28-35	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	1.0-3.0	.43	.43			
		47-80	20-30	1.40-1.45	0.6-2	0.18-0.20	1.0-4.2	0.5-1.0	.43	.43			
993D2: Gara, moderately eroded-----	45												
		0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
Armstrong, moderately eroded-----	35												
		0-8	27-36	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	2.0-3.0	.32	.32	3	4	86
		8-18	35-42	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.0-1.0	.32	.32			
		18-28	36-60	1.55-1.60	0.06-0.2	0.11-0.16	6.1-13.7	0.0-1.0	.32	.32			
		28-35	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-1.0	.32	.32			
		35-60	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-0.5	.32	.32			
993E2: Gara, moderately eroded-----	45												
		0-8	18-27	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
993E2: Armstrong, moderately eroded-----	40	0-8	27-36	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	2.0-3.0	.32	.32	3	4	86
		8-18	35-42	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.0-1.0	.32	.32			
		18-28	36-60	1.55-1.60	0.06-0.2	0.11-0.16	6.1-13.7	0.0-1.0	.32	.32			
		28-35	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-1.0	.32	.32			
		35-60	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-0.5	.32	.32			
993F2: Gara, moderately eroded-----	65	0-8	18-30	1.50-1.55	0.2-0.6	0.16-0.18	3.2-5.8	2.0-3.0	.32	.32	5	6	48
		8-27	25-38	1.55-1.75	0.2-0.6	0.16-0.18	3.0-5.9	0.0-0.5	.32	.32			
		27-60	24-38	1.65-1.75	0.2-0.6	0.16-0.18	3.2-5.8	0.0-0.5	.37	.37			
Armstrong, moderately eroded-----	25	0-8	27-36	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	2.0-3.0	.32	.32	3	6	48
		8-18	35-42	1.45-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.0-1.0	.32	.32			
		18-28	36-60	1.55-1.60	0.06-0.2	0.11-0.16	6.1-13.7	0.0-1.0	.32	.32			
		28-35	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-1.0	.32	.32			
		35-60	30-36	1.55-1.70	0.2-0.6	0.14-0.16	4.2-6.1	0.0-0.5	.32	.32			
1160: Walford, terrace-----	95	0-8	20-26	1.35-1.40	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	6	48
		8-22	18-26	1.40-1.50	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
		22-50	27-35	1.35-1.40	0.2-0.6	0.18-0.20	6.0-8.9	0.0-1.0	.43	.43			
		50-63	27-35	1.35-1.40	0.2-0.6	0.18-0.20	6.0-8.9	0.0-1.0	.43	.43			
		63-80	24-27	1.40-1.45	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43			
1220: Nodaway, frequently flooded, channeled---	75	0-7	18-27	1.25-1.35	0.6-2	0.20-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
		7-31	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.0-0.5	.43	.43			
		31-42	18-30	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.0-0.5	.43	.43			
		42-80	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.0-0.5	.43	.43			
1291: Atterberry, terrace---	95	0-8	20-26	1.35-1.55	0.6-2	0.22-0.25	0.0-2.9	2.0-4.0	.32	.32	5	6	48
		8-17	15-26	1.40-1.60	0.6-2	0.21-0.24	0.0-2.9	0.5-1.0	.32	.32			
		17-48	25-35	1.40-1.60	0.6-2	0.14-0.24	3.0-5.9	0.1-0.5	.43	.43			
		48-60	18-27	1.40-1.65	0.6-2	0.14-0.24	0.0-2.9	0.1-0.5	.43	.43			
1354. Aguents, ponded													

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
1442B:		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Tama-----	40	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	3	48
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Sparta-----	35	0-8	3-10	1.20-1.40	2-6	0.09-0.12	0.0-0.0	1.0-2.0	.17	.17	5	2	134
		8-15	3-10	1.20-1.40	2-6	0.09-0.12	0.0-0.0	1.0-2.0	.17	.17			
		15-72	1-8	1.40-1.60	6-20	0.05-0.11	0.0-0.0	0.0-0.5	.15	.15			
		72-80	0-5	1.50-1.70	6-20	0.04-0.07	0.0-0.0	0.0-0.5	.15	.15			
Pillot-----	20	0-8	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32	5	6	48
		8-15	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32			
		15-32	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	1.0-2.0	.43	.43			
		32-36	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		36-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
1442C:													
Tama-----	40	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	3	48
		8-18	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28			
		18-45	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		45-80	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Sparta-----	35	0-8	3-10	1.20-1.40	2-6	0.09-0.12	0.0-0.0	1.0-2.0	.17	.17	5	2	134
		8-15	3-10	1.20-1.40	2-6	0.09-0.12	0.0-0.0	1.0-2.0	.17	.17			
		15-72	1-8	1.40-1.60	6-20	0.05-0.11	0.0-0.0	0.0-0.5	.15	.15			
		72-80	0-5	1.50-1.70	6-20	0.04-0.07	0.0-0.0	0.0-0.5	.15	.15			
Pillot-----	20	0-8	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32	5	6	48
		8-15	20-27	1.20-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.32	.32			
		15-32	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	1.0-2.0	.43	.43			
		32-36	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		36-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
1442C2:													
Tama, moderately eroded-----	40	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	3	48
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Sparta, moderately eroded-----	35	0-8	3-10	1.20-1.40	2-6	0.09-0.12	0.0-2.9	1.0-2.0	.17	.17	5	2	134
		8-66	1-8	1.40-1.60	6-20	0.05-0.11	0.0-2.9	0.1-1.0	.17	.17			
		66-80	0-5	1.50-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
1442C2: Pillot, moderately eroded-----	20	0-8	27-29	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.28	.28	5	6	48
		8-26	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	0.5-1.0	.43	.43			
		26-30	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		30-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
1442D2: Tama, moderately eroded-----	40	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	3	48
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Sparta, moderately eroded-----	35	0-8	3-10	1.20-1.40	2-6	0.09-0.12	0.0-2.9	1.0-2.0	.17	.17	5	2	134
		8-66	1-8	1.40-1.60	6-20	0.05-0.11	0.0-2.9	0.1-1.0	.17	.17			
		66-80	0-5	1.50-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.17	.17			
Pillot, moderately eroded-----	20	0-8	27-29	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.28	.28	5	6	48
		8-26	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	0.5-1.0	.43	.43			
		26-30	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		30-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			
1442E2: Tama, moderately eroded-----	40	0-8	22-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.28	.28	5	3	48
		8-26	27-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
		26-60	20-30	1.35-1.40	0.6-2	0.18-0.20	3.0-5.9	0.0-0.5	.43	.43			
Sparta, moderately eroded-----	35	0-8	3-10	1.20-1.40	2-6	0.09-0.12	0.0-2.9	1.0-2.0	.17	.17	5	2	134
		8-66	1-8	1.40-1.60	6-20	0.05-0.11	0.0-2.9	0.1-1.0	.17	.17			
		66-80	0-5	1.50-1.70	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.17	.17			
Pillot, moderately eroded-----	20	0-8	27-29	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.28	.28	5	6	48
		8-26	25-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	0.5-1.0	.43	.43			
		26-30	10-25	1.50-1.60	0.6-2	0.11-0.19	0.0-2.9	0.0-0.5	.37	.37			
		30-60	2-10	1.60-1.70	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
1540: Quiver, frequently flooded-----	40	In 0-9 9-65	Pct 27-35 20-35	g/cc 1.15-1.35 1.40-1.50	In/hr 0.2-0.6 0.2-0.6	In/in 0.15-0.20 0.18-0.22	Pct 3.0-5.9 0.3-5.9	Pct 1.0-3.0 0.0-1.0	.28 .32	.28 .32	5	6	48
Zook, frequently flooded-----	30	0-8 8-38 38-52 52-60	35-40 35-40 36-45 20-45	1.30-1.35 1.30-1.35 1.30-1.45 1.30-1.45	0.2-0.6 0.2-0.6 0.06-0.2 0.06-0.6	0.21-0.23 0.21-0.23 0.11-0.13 0.11-0.22	6.0-8.9 6.0-8.9 6.0-8.9 6.0-8.9	5.0-7.0 5.0-7.0 2.0-4.0 0.0-1.0	.37 .37 .28 .28	.37 .37 .28 .28	5	7	38
Klum, frequently flooded-----	15	0-8 8-60	5-18 5-18	1.50-1.60 1.50-1.60	2-6 2-6	0.15-0.18 0.13-0.18	0.0-2.9 0.0-2.9	1.0-2.0 0.0-0.5	.20 .20	.20 .20	5	3	86
2219: Ella, rarely flooded--	70	0-8 8-55 55-72 72-80	15-22 18-30 10-30 10-30	1.35-1.60 1.55-1.65 1.55-1.70 1.55-1.70	0.6-2 0.6-2 0.6-2 0.6-2	0.22-0.24 0.18-0.22 0.10-0.18 0.10-0.18	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 0.5-1.5 0.0-0.5 0.0-0.5	.37 .37 .37 .15	.37 .37 .37 .15	4	5	56
2219B: Ella, rarely flooded--	75	0-8 8-55 55-72 72-80	15-22 18-30 10-30 10-30	1.35-1.60 1.55-1.65 1.55-1.70 1.55-1.70	0.6-2 0.6-2 0.6-2 0.6-2	0.22-0.24 0.18-0.22 0.10-0.18 0.10-0.18	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 0.5-1.5 0.0-0.5 0.0-0.5	.37 .37 .37 .15	.37 .37 .37 .15	4	5	56
2219C2: Ella, moderately eroded-----	80	0-8 8-46 46-72 72-80	15-22 18-30 10-30 10-30	1.35-1.60 1.55-1.65 1.55-1.70 1.55-1.70	0.6-2 0.6-2 0.6-2 0.6-2	0.22-0.24 0.18-0.22 0.10-0.18 0.10-0.18	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	1.0-2.0 0.5-1.0 0.0-0.5 0.0-0.5	.37 .37 .37 .15	.37 .37 .37 .15	4	5	56
2422: Amana, occasionally flooded-----	50	0-8 8-15 15-37 37-48 48-80	18-27 18-27 18-30 18-30 18-26	1.20-1.30 1.20-1.30 1.25-1.40 1.25-1.40 1.25-1.40	0.6-2 0.6-2 0.6-2 0.6-2 0.6-2	0.22-0.24 0.22-0.24 0.20-0.22 0.20-0.22 0.20-0.22	3.0-5.9 3.0-5.9 1.6-2.9 1.6-2.9 0.0-2.9	2.0-4.0 2.0-4.0 1.0-2.0 1.0-2.0 0.0-1.0	.28 .28 .37 .37 .37	.28 .28 .37 .37 .37	5	6	48

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
									Kw	Kf	T		
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
2422: Nodaway, occasionally flooded-----	30	0-7 7-31 31-42 42-80	18-27 18-28 18-30 18-28	1.25-1.35 1.25-1.35 1.25-1.35 1.25-1.35	0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.23 0.20-0.23 0.20-0.23 0.20-0.23	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 0.0-0.5 0.0-0.5 0.0-0.5	.32 .43 .43 .43	.32 .43 .43 .43	5	6	48
Lawson, occasionally flooded-----	20	0-8 8-30 30-80	10-27 10-30 18-30	1.20-1.55 1.20-1.55 1.50-1.70	0.6-2 0.6-2 0.6-2	0.22-0.24 0.18-0.22 0.11-0.15	0.0-2.9 0.0-2.9 3.0-5.9	3.0-7.0 3.0-7.0 1.0-4.0	.28 .28 .43	.28 .28 .43	5	6	56
4946: Udorthents. Interstate highway.													
5010. Pits, sand and gravel													
5040: Udorthents-----	100	0-60 60-80	12-32 ---	1.45-1.65 ---	0.0015-2 0.0015-2	0.12-0.18 ---	3.0-5.9 ---	--- ---	.32 ---	--- ---	-	---	---
6220: Nodaway, frequently flooded-----	85	0-7 7-31 31-42 42-80	18-27 18-28 18-30 18-28	1.25-1.35 1.25-1.35 1.25-1.35 1.25-1.35	0.6-2 0.6-2 0.6-2 0.6-2	0.20-0.23 0.20-0.23 0.20-0.23 0.20-0.23	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	2.0-3.0 0.0-0.5 0.0-0.5 0.0-0.5	.32 .43 .43 .43	.32 .43 .43 .43	5	6	48
6422: Amana, frequently flooded-----	90	0-8 8-15 15-37 37-48 48-80	18-27 18-27 18-30 18-30 18-26	1.20-1.30 1.20-1.30 1.25-1.40 1.25-1.40 1.25-1.40	0.6-2 0.6-2 0.6-2 0.6-2 0.6-2	0.22-0.24 0.22-0.24 0.20-0.22 0.20-0.22 0.20-0.22	3.0-5.9 3.0-5.9 1.6-2.9 1.6-2.9 0.0-2.9	2.0-4.0 2.0-4.0 1.0-2.0 1.0-2.0 0.0-1.0	.28 .28 .37 .37 .37	.28 .28 .37 .37 .37	5	6	48
AW. Animal waste lagoon													

Chemical Properties

The table described in this section shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
5B:					
Ackmore-----	0-8	25-30	---	5.6-7.3	0
	8-25	25-30	---	5.6-7.3	0
	25-60	25-30	---	5.6-7.8	5-10
Colo-----	0-8	36-41	---	5.6-7.3	0
	8-40	36-41	---	5.6-7.3	0
	40-46	36-41	---	5.6-7.3	0
	46-60	30-36	---	6.1-7.3	0
7:					
Wiota, rarely flooded	0-8	20-25	---	5.6-7.3	0
	8-22	20-25	---	5.6-7.3	0
	22-48	20-25	---	5.1-6.5	0
	48-64	20-25	---	6.1-6.5	0
7B:					
Wiota, rarely flooded	0-8	20-25	---	5.6-7.3	0
	8-22	20-25	---	5.6-7.3	0
	22-48	20-25	---	5.1-6.5	0
	48-64	20-25	---	6.1-6.5	0
8B:					
Judson-----	0-8	25-30	---	5.6-7.3	0
	8-28	25-30	---	5.6-7.3	0
	28-52	25-30	---	5.6-7.3	0
	52-60	25-30	---	6.1-7.8	0-15
24C2:					
Shelby, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-11	20-25	---	5.1-7.3	0
	11-42	20-25	---	5.1-7.3	0
	42-72	20-25	---	6.6-8.4	0-30
24D2:					
Shelby, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-11	20-25	---	5.1-7.3	0
	11-42	20-25	---	5.1-7.3	0
	42-72	20-25	---	6.6-8.4	0-30
24D3:					
Shelby, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-36	20-25	---	5.1-7.3	0
	36-72	20-25	---	6.6-8.4	0-30
24E2:					
Shelby, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-11	20-25	---	5.1-7.3	0
	11-42	20-25	---	5.1-7.3	0
	42-72	20-25	---	6.6-8.4	0-30

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
24E3: Shelby, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-36	20-25	---	5.1-7.3	0
	36-72	20-25	---	6.6-8.4	0-30
41: Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
41B: Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
41C: Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
41D: Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
43: Bremer, rarely flooded-----	0-8	36-41	---	5.6-7.3	0
	8-19	36-41	---	5.6-7.3	0
	19-42	36-41	---	5.6-6.5	0
	42-60	30-36	---	5.6-6.5	0
51: Vesser, occasionally flooded-----	0-8	25-30	---	5.6-7.3	0
	8-12	25-30	---	5.6-7.3	0
	12-31	20-25	---	5.1-6.0	0
	31-60	25-30	---	5.1-6.5	0
54: Zook, occasionally flooded-----	0-8	36-41	---	5.6-7.3	0
	8-38	36-41	---	5.6-7.3	0
	38-52	36-41	---	5.6-7.8	0
	52-60	30-36	---	5.6-7.8	0
54+: Zook, occasionally flooded, overwash---	0-8	25-30	---	5.6-7.3	0
	8-14	25-30	---	5.6-7.3	0
	14-38	36-41	---	5.6-7.3	0
	38-52	36-41	---	5.6-7.8	0
	52-60	30-36	---	5.6-7.8	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
63C:					
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
63E:					
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
63G:					
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
65D2:					
Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0
65D3:					
Lindley, severely eroded-----	0-8	10-16	---	4.5-7.3	0
	8-34	15-20	---	4.5-6.5	0
	34-60	10-16	---	6.1-7.8	0
65E2:					
Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0
65E3:					
Lindley, severely eroded-----	0-8	10-16	---	4.5-7.3	0
	8-34	15-20	---	4.5-6.5	0
	34-60	10-16	---	6.1-7.8	0
65F:					
Lindley-----	0-3	10-16	---	4.5-7.3	0
	3-7	10-16	---	4.5-7.3	0
	7-46	15-20	---	4.5-6.5	0
	46-60	10-16	---	6.1-7.8	0
65F2:					
Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0
65F3:					
Lindley, severely eroded-----	0-8	10-16	---	4.5-7.3	0
	8-34	15-20	---	4.5-6.5	0
	34-60	10-16	---	6.1-7.8	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
65G:					
Lindley-----	0-3	10-16	---	4.5-7.3	0
	3-7	10-16	---	4.5-7.3	0
	7-46	15-20	---	4.5-6.5	0
	46-60	10-16	---	6.1-7.8	0
75:					
Givin-----	0-8	20-25	---	5.6-7.3	0
	8-16	20-25	---	5.6-7.3	0
	16-42	---	20-25	5.1-5.5	0
	42-80	20-25	---	5.1-6.0	0
76B:					
Ladoga-----	0-8	20-25	---	6.1-7.3	0
	8-14	20-25	---	6.1-7.3	0
	14-45	20-25	---	5.1-6.0	0
	45-60	20-25	---	5.1-6.5	0
76C:					
Ladoga-----	0-8	20-25	---	6.1-7.3	0
	8-14	20-25	---	6.1-7.3	0
	14-45	20-25	---	5.1-6.0	0
	45-60	20-25	---	5.1-6.5	0
76C2:					
Ladoga, moderately eroded-----	0-8	20-25	---	6.1-7.3	0
	8-10	20-25	---	6.1-7.3	0
	10-39	20-25	---	5.1-6.0	0
	39-60	20-25	---	5.1-6.5	0
76D:					
Ladoga-----	0-8	20-25	---	6.1-7.3	0
	8-14	20-25	---	6.1-7.3	0
	14-45	20-25	---	5.1-6.0	0
	45-60	20-25	---	5.1-6.5	0
76D2:					
Ladoga, moderately eroded-----	0-8	20-25	---	6.1-7.3	0
	8-10	20-25	---	6.1-7.3	0
	10-39	20-25	---	5.1-6.0	0
	39-60	20-25	---	5.1-6.5	0
76D3:					
Ladoga, severely eroded-----	0-8	20-25	---	6.1-7.3	0
	8-33	20-25	---	5.1-6.0	0
	33-60	20-25	---	5.1-6.5	0
76E2:					
Ladoga, moderately eroded-----	0-8	20-25	---	6.1-7.3	0
	8-10	20-25	---	6.1-7.3	0
	10-39	20-25	---	5.1-6.0	0
	39-60	20-25	---	5.1-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
76E3: Ladoga, severely eroded-----	0-8	20-25	---	6.1-7.3	0
	8-33	20-25	---	5.1-6.0	0
	33-60	20-25	---	5.1-6.5	0
80B: Clinton-----	0-8	15-20	---	5.1-7.3	0
	8-15	15-20	---	5.1-7.3	0
	15-72	---	25-30	4.5-6.0	0
	72-80	20-25	---	6.1-6.5	0
80C: Clinton-----	0-8	15-20	---	5.1-7.3	0
	8-15	15-20	---	5.1-7.3	0
	15-72	---	25-30	4.5-6.0	0
	72-80	20-25	---	6.1-6.5	0
80C2: Clinton, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-10	25-30	---	5.1-7.3	0
	10-66	---	25-30	4.5-6.0	0
	66-80	20-25	---	6.1-6.5	0
80D: Clinton-----	0-8	15-20	---	5.1-7.3	0
	8-15	15-20	---	5.1-7.3	0
	15-72	---	25-30	4.5-6.0	0
	72-80	20-25	---	6.1-6.5	0
80D2: Clinton, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-10	25-30	---	5.1-7.3	0
	10-66	---	25-30	4.5-6.0	0
	66-80	20-25	---	6.1-6.5	0
80D3: Clinton, severely eroded-----	0-8	25-30	---	5.6-7.3	0
	8-60	---	25-30	4.5-6.0	0
	60-80	20-25	---	6.1-6.5	0
80E2: Clinton, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-10	25-30	---	5.1-7.3	0
	10-66	---	25-30	4.5-6.0	0
	66-80	20-25	---	6.1-6.5	0
80E3: Clinton, severely eroded-----	0-8	25-30	---	5.6-7.3	0
	8-60	---	25-30	4.5-6.0	0
	60-80	20-25	---	6.1-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
80F2: Clinton, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-10	25-30	---	5.1-7.3	0
	10-66	---	25-30	4.5-6.0	0
	66-80	20-25	---	6.1-6.5	0
83B: Kenyon-----	0-8	20-25	---	5.6-7.3	0
	8-14	20-25	---	5.6-7.3	0
	14-19	20-25	---	5.6-7.3	0
	19-47	20-25	---	5.1-7.3	0
	47-76	20-25	---	5.1-8.4	0-30
83C: Kenyon-----	0-8	20-25	---	5.6-7.3	0
	8-14	20-25	---	5.6-7.3	0
	14-19	20-25	---	5.6-7.3	0
	19-47	20-25	---	5.1-7.3	0
	47-76	20-25	---	5.1-8.4	0-30
83C2: Kenyon, moderately eroded-----	0-8	20-25	---	5.6-7.3	0
	8-14	20-25	---	5.6-7.3	0
	14-35	20-25	---	5.1-7.3	0
	35-41	20-25	---	6.6-8.4	0-25
	41-76	20-25	---	5.1-8.4	0-30
83D2: Kenyon, moderately eroded-----	0-8	20-25	---	5.6-7.3	0
	8-14	20-25	---	5.6-7.3	0
	14-35	20-25	---	5.1-7.3	0
	35-41	20-25	---	6.6-8.4	0-25
	41-76	20-25	---	5.1-8.4	0-30
88: Nevin, rarely flooded	0-8	30-36	---	5.6-7.3	0
	8-30	30-36	---	5.6-7.3	0
	30-46	30-36	---	6.1-6.5	0
	46-62	25-30	---	6.6-7.3	0
93D2: Shelby, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-11	20-25	---	5.1-7.3	0
	11-42	20-25	---	5.1-7.3	0
	42-72	20-25	---	6.6-8.4	0-30
Adair, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-16	41-50	---	5.1-6.5	0
	16-41	41-50	---	5.1-6.5	0
	41-80	25-30	---	5.6-7.8	5-10

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
93D3: Shelby, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-36	20-25	---	5.1-7.3	0
	36-72	20-25	---	6.6-8.4	0-30
Adair, severely eroded-----	0-8	25-30	---	5.1-7.3	0
	8-16	41-50	---	5.1-6.5	0
	16-35	41-50	---	5.1-6.5	0
	35-80	25-30	---	5.6-7.8	5-10
93E2: Shelby, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-11	20-25	---	5.1-7.3	0
	11-42	20-25	---	5.1-7.3	0
	42-72	20-25	---	6.6-8.4	0-30
Adair, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-16	41-50	---	5.1-6.5	0
	16-41	41-50	---	5.1-6.5	0
	41-80	25-30	---	5.6-7.8	5-10
119: Muscatine-----	0-8	30-36	---	5.1-7.3	0
	8-20	30-36	---	5.1-7.3	0
	20-42	30-36	---	5.1-7.3	0
	42-64	30-36	---	6.6-7.8	0-15
120B: Tama-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
120C: Tama-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
120C2: Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0
120D2: Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0
120D3: Tama, severely eroded	0-8	25-30	---	5.1-7.3	0
	8-20	25-30	---	5.1-6.5	0
	20-60	25-30	---	5.6-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
120E2: Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0
122: Sperry-----	0-8	25-30	---	5.6-7.3	0
	8-10	25-30	---	5.6-7.3	0
	10-17	20-25	---	5.6-7.3	0
	17-28	30-36	---	5.1-6.5	0
	28-47	25-30	---	5.6-6.5	0
	47-80	25-30	---	5.6-6.5	0
133: Colo, occasionally flooded-----	0-8	36-41	---	5.6-7.3	0
	8-40	36-41	---	5.6-7.3	0
	40-46	36-41	---	5.6-7.3	0
	46-60	30-36	---	6.1-7.3	0
133+: Colo, occasionally flooded, overwash---	0-8	25-30	---	5.6-7.3	0
	8-14	25-30	---	5.6-7.3	0
	14-40	36-41	---	5.6-7.3	0
	40-46	36-41	---	5.6-7.3	0
	46-60	30-36	---	6.1-7.3	0
162B: Downs-----	0-8	20-25	---	5.1-7.3	0
	8-17	20-25	---	5.1-7.3	0
	17-39	20-25	---	4.5-7.3	0
	39-60	20-25	---	5.6-7.3	0
162C: Downs-----	0-8	20-25	---	5.1-7.3	0
	8-17	20-25	---	5.1-7.3	0
	17-39	20-25	---	4.5-7.3	0
	39-60	20-25	---	5.6-7.3	0
162C2: Downs, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-33	20-25	---	4.5-7.3	0
	33-60	20-25	---	5.6-7.3	0
162D2: Downs, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-33	20-25	---	4.5-7.3	0
	33-60	20-25	---	5.6-7.3	0
162D3: Downs, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-27	20-25	---	4.5-7.3	0
	27-60	20-25	---	5.6-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
162E2: Downs, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-33	20-25	---	4.5-7.3	0
	33-60	20-25	---	5.6-7.3	0
162E3: Downs, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-27	20-25	---	4.5-7.3	0
	27-60	20-25	---	5.6-7.3	0
163B: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
163C: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
163C2: Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
163D: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
163D2: Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
163D3: Fayette, severely eroded-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15
163E: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
163E2: Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
163E3: Fayette, severely eroded-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15
163F: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
163F2: Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
163F3: Fayette, severely eroded-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15
163G: Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
165: Stronghurst-----	0-8	15-20	---	5.1-7.3	0
	8-11	15-20	---	5.1-7.3	0
	11-15	17-23	---	5.1-7.3	0
	15-47	17-23	---	5.1-7.3	0
	47-60	13-18	---	5.1-7.3	0
171C2: Bassett, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-53	20-25	---	4.5-7.3	0
	53-73	20-25	---	5.1-8.4	0-30
171D2: Bassett, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-53	20-25	---	4.5-7.3	0
	53-73	20-25	---	5.1-8.4	0-30
171D3: Bassett, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-47	20-25	---	4.5-7.3	0
	47-73	20-25	---	5.1-8.4	0-30
171E2: Bassett, moderately eroded-----	0-8	20-25	---	5.1-7.3	0
	8-53	20-25	---	4.5-7.3	0
	53-73	20-25	---	5.1-8.4	0-30

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
171E3: Bassett, severely eroded-----	0-8	20-25	---	5.1-7.3	0
	8-47	20-25	---	4.5-7.3	0
	47-73	20-25	---	5.1-8.4	0-30
172: Wabash, occasionally flooded-----	0-8	30-35	---	5.1-7.3	0
	8-19	28-42	---	5.1-7.8	0
	19-60	28-42	---	5.1-7.8	0
175: Dickinson-----	0-9	15-20	---	5.6-7.3	0
	9-18	15-20	---	5.6-7.3	0
	18-30	15-20	---	5.6-7.3	0
	30-36	15-20	---	5.1-6.5	0
	36-60	5.0-10	---	5.6-6.5	0
175B: Dickinson-----	0-9	15-20	---	5.6-7.3	0
	9-18	15-20	---	5.6-7.3	0
	18-30	15-20	---	5.6-7.3	0
	30-36	15-20	---	5.1-6.5	0
	36-60	5.0-10	---	5.6-6.5	0
175C: Dickinson-----	0-9	15-20	---	5.6-7.3	0
	9-18	15-20	---	5.6-7.3	0
	18-30	15-20	---	5.6-7.3	0
	30-36	15-20	---	5.1-6.5	0
	36-60	5.0-10	---	5.6-6.5	0
178: Waukeee-----	0-8	20-25	---	5.6-6.5	0
	8-16	20-25	---	5.6-6.5	0
	16-20	20-25	---	5.1-6.0	0
	20-35	20-25	---	5.1-6.0	0
	35-44	5.0-10	---	5.6-6.5	0
	44-66	5.0-10	---	5.6-6.5	0
178B: Waukeee-----	0-8	20-25	---	5.6-6.5	0
	8-16	20-25	---	5.6-6.5	0
	16-20	20-25	---	5.1-6.0	0
	20-35	20-25	---	5.1-6.0	0
	35-44	5.0-10	---	5.6-6.5	0
	44-66	5.0-10	---	5.6-6.5	0
178C: Waukeee-----	0-8	20-25	---	5.6-6.5	0
	8-16	20-25	---	5.6-6.5	0
	16-20	20-25	---	5.1-6.0	0
	20-35	20-25	---	5.1-6.0	0
	35-44	5.0-10	---	5.6-6.5	0
	44-66	5.0-10	---	5.6-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
179D2: Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25
179D3: Gara, severely eroded	0-8	25-30	---	5.6-7.3	0
	8-21	25-30	---	4.5-6.5	0
	21-60	25-30	---	5.6-8.4	0-25
179E2: Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25
179E3: Gara, severely eroded	0-8	25-30	---	5.6-7.3	0
	8-21	25-30	---	4.5-6.5	0
	21-60	25-30	---	5.6-8.4	0-25
179F2: Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25
179F3: Gara, severely eroded	0-8	25-30	---	5.6-7.3	0
	8-21	25-30	---	4.5-6.5	0
	21-60	25-30	---	5.6-8.4	0-25
180: Keomah-----	0-8	15-20	---	4.5-7.3	0
	8-18	15-20	---	4.5-7.3	0
	18-53	---	25-30	4.5-5.5	0
	53-80	15-20	---	5.1-7.3	0
192D2: Adair, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-16	41-50	---	5.1-6.5	0
	16-41	41-50	---	5.1-6.5	0
	41-80	25-30	---	5.6-7.8	5-10
192D3: Adair, severely eroded-----	0-8	25-30	---	5.1-7.3	0
	8-16	41-50	---	5.1-6.5	0
	16-35	41-50	---	5.1-6.5	0
	35-80	25-30	---	5.6-7.8	5-10
220: Nodaway, occasionally flooded-----	0-7	20-25	---	6.1-7.3	0
	7-31	20-25	---	6.1-7.3	0
	31-42	20-25	---	6.1-7.3	0
	42-80	20-25	---	6.1-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
279:					
Taintor-----	0-9	36-41	---	5.6-7.3	0
	9-20	36-41	---	5.6-7.3	0
	20-28	30-36	---	5.6-6.5	0
	28-36	30-36	---	5.6-6.5	0
	36-60	25-30	---	6.1-7.8	0-15
280:					
Mahaska-----	0-8	30-36	---	5.1-7.3	0
	8-24	30-36	---	5.1-7.3	0
	24-30	---	30-36	4.5-6.0	0
	30-61	---	30-36	4.5-6.0	0
	61-80	25-30	---	5.6-7.3	0
281B:					
Otley-----	0-8	25-30	---	5.1-7.3	0
	8-17	25-30	---	5.1-7.3	0
	17-61	---	25-30	5.1-5.5	0
	61-73	25-30	---	5.6-7.3	0
281C:					
Otley-----	0-8	25-30	---	5.1-7.3	0
	8-17	25-30	---	5.1-7.3	0
	17-61	---	25-30	5.1-5.5	0
	61-73	25-30	---	5.6-7.3	0
281C2:					
Otley, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-55	---	25-30	5.1-5.5	0
	55-73	25-30	---	5.6-7.3	0
281D2:					
Otley, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-55	---	25-30	5.1-5.5	0
	55-73	25-30	---	5.6-7.3	0
281D3:					
Otley, severely eroded-----	0-8	25-30	---	5.1-7.3	0
	8-49	---	25-30	5.1-5.5	0
	49-73	25-30	---	5.6-7.3	0
281E2:					
Otley, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-55	---	25-30	5.1-5.5	0
	55-73	25-30	---	5.6-7.3	0
291:					
Atterberry-----	0-8	20-25	---	5.6-7.3	0
	8-17	10-18	---	5.1-7.3	0
	17-48	15-22	---	5.1-7.3	0
	48-60	11-17	---	5.6-7.8	0-15

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
293C:					
Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
293D:					
Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
293D2:					
Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
Chelsea, moderately eroded-----	0-4	5.0-10	---	5.6-7.3	0
	4-30	5.0-10	---	5.1-6.5	0
	30-70	5.0-10	---	5.1-6.5	0
Tell, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-12	4.0-25	---	5.1-6.5	0
	12-22	4.0-25	---	5.1-6.5	0
	22-26	2.0-20	---	5.1-6.5	0
	26-60	0.0-7.0	---	5.1-6.5	0
293E:					
Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
293E:					
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
293E2:					
Fayette, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
Chelsea, moderately eroded-----	0-4	5.0-10	---	5.6-7.3	0
	4-30	5.0-10	---	5.1-6.5	0
	30-70	5.0-10	---	5.1-6.5	0
Tell, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-12	4.0-25	---	5.1-6.5	0
	12-22	4.0-25	---	5.1-6.5	0
	22-26	2.0-20	---	5.1-6.5	0
	26-60	0.0-7.0	---	5.1-6.5	0
293G:					
Fayette-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
Chelsea-----	0-4	5.0-10	---	5.6-7.3	0
	4-36	5.0-10	---	5.1-6.5	0
	36-70	5.0-10	---	5.1-6.5	0
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
353B:					
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
353C:					
Tell-----	0-9	15-20	---	5.1-7.3	0
	9-18	4.0-25	---	5.1-6.5	0
	18-28	4.0-25	---	5.1-6.5	0
	28-32	2.0-20	---	5.1-6.5	0
	32-60	0.0-7.0	---	5.1-6.5	0
353C2:					
Tell, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-12	4.0-25	---	5.1-6.5	0
	12-22	4.0-25	---	5.1-6.5	0
	22-26	2.0-20	---	5.1-6.5	0
	26-60	0.0-7.0	---	5.1-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
353D2: Tell, moderately eroded-----	0-8	15-20	---	5.1-7.3	0
	8-12	4.0-25	---	5.1-6.5	0
	12-22	4.0-25	---	5.1-6.5	0
	22-26	2.0-20	---	5.1-6.5	0
	26-60	0.0-7.0	---	5.1-6.5	0
377B: Dinsdale-----	0-8	25-30	---	5.1-7.3	0
	8-19	25-30	---	5.1-7.3	0
	19-34	25-30	---	5.1-7.3	0
	34-46	25-30	---	5.6-8.4	0-25
	46-80	25-30	---	5.6-8.4	0-25
377C: Dinsdale-----	0-8	25-30	---	5.1-7.3	0
	8-19	25-30	---	5.1-7.3	0
	19-34	25-30	---	5.1-7.3	0
	34-46	25-30	---	5.6-8.4	0-25
	46-80	25-30	---	5.6-8.4	0-25
420: Tama, terrace-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
420B: Tama, terrace-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
422: Amana, occasionally flooded-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-37	25-30	---	5.1-6.5	0
	37-48	25-30	---	5.1-6.5	0
	48-80	25-30	---	5.6-6.5	0
424D2: Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0
Keswick, moderately eroded-----	0-8	25-30	---	4.5-7.3	0
	8-12	25-30	---	4.5-7.3	0
	12-26	---	30-50	4.5-6.0	0
	26-60	30-36	---	4.5-7.8	0-15
424E2: Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
424E2: Keswick, moderately eroded-----	0-8	25-30	---	4.5-7.3	0
	8-12	25-30	---	4.5-7.3	0
	12-26	---	30-50	4.5-6.0	0
	26-60	30-36	---	4.5-7.8	0-15
424E3: Lindley, severely eroded-----	0-8	10-16	---	4.5-7.3	0
	8-34	15-20	---	4.5-6.5	0
	34-60	10-16	---	6.1-7.8	0
Keswick, severely eroded-----	0-8	25-30	---	4.5-7.3	0
	8-13	25-30	---	4.5-7.3	0
	13-20	---	30-50	4.5-6.0	0
	20-60	30-36	---	4.5-7.8	0-15
424F2: Lindley, moderately eroded-----	0-8	10-16	---	4.5-7.3	0
	8-40	15-20	---	4.5-6.5	0
	40-60	10-16	---	6.1-7.8	0
Keswick, moderately eroded-----	0-8	25-30	---	4.5-7.3	0
	8-12	25-30	---	4.5-7.3	0
	12-26	---	30-50	4.5-6.0	0
	26-60	30-36	---	4.5-7.8	0-15
425D2: Keswick, moderately eroded-----	0-8	25-30	---	4.5-7.3	0
	8-12	25-30	---	4.5-7.3	0
	12-26	---	30-50	4.5-6.0	0
	26-60	30-36	---	4.5-7.8	0-15
425D3: Keswick, severely eroded-----	0-8	25-30	---	4.5-7.3	0
	8-13	25-30	---	4.5-7.3	0
	13-20	---	30-50	4.5-6.0	0
	20-60	30-36	---	4.5-7.8	0-15
428B: Ely-----	0-8	30-36	---	5.6-7.3	0
	8-32	30-36	---	5.6-7.3	0
	32-47	30-36	---	6.1-7.3	0
	47-80	25-30	---	6.6-8.4	0-25
430: Ackmore, occasionally flooded-----	0-8	25-30	---	5.6-7.3	0
	8-25	25-30	---	5.6-7.3	0
	25-60	25-30	---	5.6-7.8	5-10

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
450:					
Pillot-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-32	25-30	---	5.6-7.3	0
	32-36	2.0-20	---	5.6-7.3	0
	36-60	5.0-10	---	5.6-7.3	0
450B:					
Pillot-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-32	25-30	---	5.6-7.3	0
	32-36	2.0-20	---	5.6-7.3	0
	36-60	5.0-10	---	5.6-7.3	0
450C:					
Pillot-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-32	25-30	---	5.6-7.3	0
	32-36	2.0-20	---	5.6-7.3	0
	36-60	5.0-10	---	5.6-7.3	0
453:					
Tuskeego, rarely flooded-----	0-8	20-25	---	5.1-7.3	0
	8-19	20-25	---	5.1-7.3	0
	19-24	30-36	---	5.1-6.5	0
	24-60	20-30	---	5.6-6.5	0
462B:					
Downs, terrace-----	0-8	20-25	---	5.1-7.3	0
	8-17	20-25	---	5.1-7.3	0
	17-39	20-25	---	4.5-7.3	0
	39-60	20-25	---	5.6-7.3	0
463B:					
Fayette, terrace-----	0-3	15-20	---	5.1-7.3	0
	3-14	15-20	---	5.1-7.3	0
	14-34	15-20	---	4.5-6.5	0
	34-73	15-20	---	5.1-7.8	0-15
463C2:					
Fayette, moderately eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
463D2:					
Fayette, moderately eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
463D3:					
Fayette, severely eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
463E2: Fayette, moderately eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
463E3: Fayette, severely eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15
463F2: Fayette, moderately eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-29	15-20	---	4.5-6.5	0
	29-73	15-20	---	5.1-7.8	0-15
463F3: Fayette, severely eroded, terrace-----	0-8	15-20	---	5.1-7.3	0
	8-22	15-20	---	4.5-6.5	0
	22-73	15-20	---	5.1-7.8	0-15
484: Lawson, occasionally flooded-----	0-8	25-30	---	6.1-7.3	0
	8-30	11-29	---	6.1-7.8	0
	30-60	9.0-17	---	6.1-7.8	0
587: Chequest, occasionally flooded	0-8	25-30	---	5.1-7.3	0
	8-12	25-30	---	5.1-7.3	0
	12-60	25-30	---	5.1-6.0	0
587+: Chequest, occasionally flooded, overwash---	0-8	20-25	---	5.1-7.3	0
	8-12	20-25	---	5.1-7.3	0
	12-24	20-25	---	5.1-7.3	0
	24-60	25-30	---	5.1-6.0	0
626: Hayfield-----	0-8	20-25	---	5.6-7.3	0
	8-13	15-20	---	5.6-7.3	0
	13-29	15-20	---	5.1-6.0	0
	29-80	5.0-10	---	5.6-7.8	0
663D2: Seaton, moderately eroded-----	0-8	15-20	---	5.6-7.3	0
	8-38	11-16	---	4.5-7.3	0
	38-80	9.0-15	---	5.6-8.4	0-25
663E2: Seaton, moderately eroded-----	0-8	15-20	---	5.6-7.3	0
	8-38	11-16	---	4.5-7.3	0
	38-80	9.0-15	---	5.6-8.4	0-25

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
663E3: Seaton, severely eroded-----	0-8	15-20	---	5.6-7.3	0
	8-32	11-16	---	4.5-7.3	0
	32-80	9.0-15	---	5.6-8.4	0-25
663F2: Seaton, moderately eroded-----	0-8	15-20	---	5.6-7.3	0
	8-38	11-16	---	4.5-7.3	0
	38-80	9.0-15	---	5.6-8.4	0-25
687: Watkins, rarely flooded-----	0-8	20-25	---	5.6-7.3	0
	8-18	20-25	---	5.1-6.5	0
	18-52	20-25	---	5.6-6.5	0
	52-80	20-25	---	5.6-6.5	0
687B: Watkins, rarely flooded-----	0-8	20-25	---	5.6-7.3	0
	8-18	20-25	---	5.1-6.5	0
	18-52	20-25	---	5.6-6.5	0
	52-80	20-25	---	5.6-6.5	0
688: Koszta, rarely flooded-----	0-8	20-25	---	5.1-7.3	0
	8-13	20-25	---	5.1-7.3	0
	13-21	20-25	---	5.1-7.3	0
	21-48	20-25	---	5.1-7.3	0
	48-60	20-25	---	5.1-7.3	0
771B: Waubeeek-----	0-8	20-25	---	5.6-7.3	0
	8-13	20-25	---	5.6-7.3	0
	13-29	20-25	---	5.1-6.0	0
	29-45	20-25	---	5.1-7.3	0
	45-80	20-25	---	5.1-7.3	0
771C2: Waubeeek, moderately eroded-----	0-8	20-25	---	5.6-7.3	0
	8-23	20-25	---	5.1-6.0	0
	23-28	20-25	---	5.1-7.3	0
	28-80	20-25	---	5.1-7.3	0
792D2: Armstrong, moderately eroded-----	0-8	30-35	---	5.6-7.3	0
	8-18	41-50	---	4.5-6.5	0
	18-28	41-50	---	4.5-6.5	0
	28-35	41-50	---	4.5-6.5	0
	35-60	30-35	---	5.1-7.8	0
876B: Ladoga, terrace-----	0-8	20-25	---	6.1-7.3	0
	8-14	20-25	---	6.1-7.3	0
	14-45	20-25	---	5.1-6.0	0
	45-60	20-25	---	5.1-6.5	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
876C:					
Ladoga, terrace-----	0-8	20-25	---	6.1-7.3	0
	8-14	20-25	---	6.1-7.3	0
	14-45	20-25	---	5.1-6.0	0
	45-60	20-25	---	5.1-6.5	0
876C2:					
Ladoga, moderately eroded, terrace-----	0-8	20-25	---	6.1-7.3	0
	8-10	20-25	---	6.1-7.3	0
	10-39	20-25	---	5.1-6.0	0
	39-60	20-25	---	5.1-6.5	0
876D2:					
Ladoga, moderately eroded, terrace-----	0-8	20-25	---	6.1-7.3	0
	8-10	20-25	---	6.1-7.3	0
	10-39	20-25	---	5.1-6.0	0
	39-60	20-25	---	5.1-6.5	0
881B:					
Otley, terrace-----	0-8	25-30	---	5.1-7.3	0
	8-17	25-30	---	5.1-7.3	0
	17-61	---	25-30	5.1-5.5	0
	61-73	25-30	---	5.6-7.3	0
911B:					
Colo-----	0-8	36-41	---	5.6-7.3	0
	8-40	36-41	---	5.6-7.3	0
	40-46	36-41	---	5.6-7.3	0
	46-60	30-36	---	6.1-7.3	0
Ely-----	0-8	30-36	---	5.6-7.3	0
	8-32	30-36	---	5.6-7.3	0
	32-47	30-36	---	6.1-7.3	0
	47-80	25-30	---	6.6-8.4	0-25
993D2:					
Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25
Armstrong, moderately eroded-----	0-8	30-35	---	5.6-7.3	0
	8-18	41-50	---	4.5-6.5	0
	18-28	41-50	---	4.5-6.5	0
	28-35	41-50	---	4.5-6.5	0
	35-60	30-35	---	5.1-7.8	0
993E2:					
Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
993E2:					
Armstrong, moderately eroded-----	0-8	30-35	---	5.6-7.3	0
	8-18	41-50	---	4.5-6.5	0
	18-28	41-50	---	4.5-6.5	0
	28-35	41-50	---	4.5-6.5	0
	35-60	30-35	---	5.1-7.8	0
993F2:					
Gara, moderately eroded-----	0-8	25-30	---	5.6-7.3	0
	8-27	25-30	---	4.5-6.5	0
	27-60	25-30	---	5.6-8.4	0-25
Armstrong, moderately eroded-----	0-8	30-35	---	5.6-7.3	0
	8-18	41-50	---	4.5-6.5	0
	18-28	41-50	---	4.5-6.5	0
	28-35	41-50	---	4.5-6.5	0
	35-60	30-35	---	5.1-7.8	0
1160:					
Walford, terrace----	0-8	20-25	---	5.6-7.3	0
	8-22	20-25	---	5.1-7.3	0
	22-50	20-25	---	5.1-6.0	0
	50-63	20-25	---	5.1-6.0	0
	63-80	20-25	---	5.6-7.8	0-15
1220:					
Nodaway, frequently flooded, channeled--	0-7	20-25	---	6.1-7.3	0
	7-31	20-25	---	6.1-7.3	0
	31-42	20-25	---	6.1-7.3	0
	42-80	20-25	---	6.1-7.3	0
1291:					
Atterberry, terrace--	0-8	20-25	---	5.6-7.3	0
	8-17	10-18	---	5.1-7.3	0
	17-48	15-22	---	5.1-7.3	0
	48-60	11-17	---	5.6-7.8	0-15
1354.					
Aquents, ponded					
1442B:					
Tama-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
Pillot-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-32	25-30	---	5.6-7.3	0
	32-36	2.0-20	---	5.6-7.3	0
	36-60	5.0-10	---	5.6-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
1442C:					
Tama-----	0-8	25-30	---	5.1-7.3	0
	8-18	25-30	---	5.1-7.3	0
	18-45	25-30	---	5.1-6.5	0
	45-80	25-30	---	5.6-7.3	0
Sparta-----	0-8	3.6-10	---	5.1-7.3	0
	8-15	3.3-9.2	---	5.1-7.3	0
	15-72	0.8-5.8	---	5.1-6.5	0
	72-80	0.0-3.8	---	5.1-6.0	0
Pillot-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-32	25-30	---	5.6-7.3	0
	32-36	2.0-20	---	5.6-7.3	0
	36-60	5.0-10	---	5.6-7.3	0
1442C2:					
Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0
Sparta, moderately eroded-----	0-8	10-15	---	5.1-7.3	0
	8-66	1.0-6.0	---	5.1-7.3	0
	66-80	1.0-4.0	---	5.1-7.8	0
Pillot, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.6-7.3	0
	26-30	2.0-20	---	5.6-7.3	0
	30-60	5.0-10	---	5.6-7.3	0
1442D2:					
Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0
Sparta, moderately eroded-----	0-8	10-15	---	5.1-7.3	0
	8-66	1.0-6.0	---	5.1-7.3	0
	66-80	1.0-4.0	---	5.1-7.8	0
Pillot, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.6-7.3	0
	26-30	2.0-20	---	5.6-7.3	0
	30-60	5.0-10	---	5.6-7.3	0
1442E2:					
Tama, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.1-6.5	0
	26-60	25-30	---	5.6-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
1442E2:					
Sparta, moderately eroded-----	0-8	10-15	---	5.1-7.3	0
	8-66	1.0-6.0	---	5.1-7.3	0
	66-80	1.0-4.0	---	5.1-7.8	0
Pillot, moderately eroded-----	0-8	25-30	---	5.1-7.3	0
	8-26	25-30	---	5.6-7.3	0
	26-30	2.0-20	---	5.6-7.3	0
	30-60	5.0-10	---	5.6-7.3	0
1540:					
Quiver, frequently flooded-----	0-9	22-29	---	5.6-7.8	0
	9-65	12-23	---	6.6-8.4	0
Zook, frequently flooded-----	0-8	36-41	---	5.6-7.3	0
	8-38	36-41	---	5.6-7.3	0
	38-52	36-41	---	5.6-7.8	0
	52-60	30-36	---	5.6-7.8	0
Klum, frequently flooded-----	0-8	10-15	---	5.6-7.3	0
	8-60	10-15	---	5.6-7.3	0
2219:					
Ella, rarely flooded	0-8	15-20	---	5.6-7.3	0
	8-55	4.0-25	---	5.1-6.5	0
	55-72	2.0-15	---	5.1-7.3	0
	72-80	2.0-15	---	5.1-8.4	0-15
2219B:					
Ella, rarely flooded	0-8	15-20	---	5.6-7.3	0
	8-55	4.0-25	---	5.1-6.5	0
	55-72	2.0-15	---	5.1-7.3	0
	72-80	2.0-15	---	5.1-8.4	0-15
2219C2:					
Ella, moderately eroded-----	0-8	15-20	---	5.6-7.3	0
	8-46	4.0-25	---	5.1-6.5	0
	46-72	2.0-15	---	5.1-7.3	0
	72-80	2.0-15	---	5.1-8.4	0-15
2422:					
Amana, occasionally flooded-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-37	25-30	---	5.1-6.5	0
	37-48	25-30	---	5.1-6.5	0
	48-80	25-30	---	5.6-6.5	0
Nodaway, occasionally flooded-----	0-7	20-25	---	6.1-7.3	0
	7-31	20-25	---	6.1-7.3	0
	31-42	20-25	---	6.1-7.3	0
	42-80	20-25	---	6.1-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbon- ate
	In	meq/100 g	meq/100 g	pH	Pct
2422: Lawson, occasionally flooded-----	0-8	25-30	---	6.1-7.3	0
	8-30	11-29	---	6.1-7.8	0
	30-80	9.0-17	---	6.1-7.8	0
4946: Udorthents.					
Interstate highway.					
5010. Pits, sand and gravel					
5040. Udorthents					
6220: Nodaway, frequently flooded-----	0-7	20-25	---	6.1-7.3	0
	7-31	20-25	---	6.1-7.3	0
	31-42	20-25	---	6.1-7.3	0
	42-80	20-25	---	6.1-7.3	0
6422: Amana, frequently flooded-----	0-8	25-30	---	5.6-7.3	0
	8-15	25-30	---	5.6-7.3	0
	15-37	25-30	---	5.1-6.5	0
	37-48	25-30	---	5.1-6.5	0
	48-80	25-30	---	5.6-6.5	0
AW. Animal waste lagoon					
SL. Sewage lagoon					
W. Water					

Water Features

The table described in this section gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are *negligible*, *very low*, *low*, *medium*, *high*, and *very high*.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall

or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
5B: Ackmore-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
Colo-----	B/D	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	---	None
			March	0.5-2.0	>6.0	---	---	None	---	None
			April	0.0-1.0	>6.0	---	---	None	---	None
			May	0.5-1.5	>6.0	---	---	None	---	None
			June	1.0-2.0	>6.0	---	---	None	---	None
			July	2.0-3.0	>6.0	---	---	None	---	None
			August	2.5-3.5	>6.0	---	---	None	---	None
			September	3.0-4.0	>6.0	---	---	None	---	None
			October	2.5-3.5	>6.0	---	---	None	---	None
			November	1.5-3.0	>6.0	---	---	None	---	None
			December	2.0-3.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
7: Wiota, rarely flooded-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	---	None
7B: Wiota, rarely flooded-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	---	None
8B: Judson-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
24C2: Shelby, moderately eroded	C	High		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
24D2: Shelby, moderately eroded	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
24D3: Shelby, severely eroded---	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
24E2: Shelby, moderately eroded	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
24E3: Shelby, severely eroded---	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
41: Sparta-----	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
41B: Sparta-----	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
41C: Sparta-----	A	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
41D: Sparta-----	A	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
43: Bremer, rarely flooded----	C	Medium								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Rare
			March	0.5-2.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.5-2.0	>6.0	---	---	None	Brief	Rare
			June	1.0-2.0	>6.0	---	---	None	Brief	Rare
			July	2.0-3.5	>6.0	---	---	None	Brief	Rare
			August	2.5-3.5	>6.0	---	---	None	Brief	Rare
			September	3.0-4.0	>6.0	---	---	None	Brief	Rare
			October	2.5-3.5	>6.0	---	---	None	Brief	Rare
			November	1.5-3.0	>6.0	---	---	None	Brief	Rare
			December	2.0-3.0	>6.0	---	---	None	---	None
51: Vesser, occasionally flooded-----	C	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.0	>6.0	---	---	None	---	None
54: Zook, occasionally flooded	C/D	Medium								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
54+: Zook, occasionally flooded, overwash-----	C/D	Medium	January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None
63C: Chelsea-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
63E: Chelsea-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
63G: Chelsea-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65D2: Lindley, moderately eroded	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65D3: Lindley, severely eroded--	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
65E2: Lindley, moderately eroded	C	High		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65E3: Lindley, severely eroded--	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65F: Lindley-----	C	Very high								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
65F2: Lindley, moderately eroded	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65F3: Lindley, severely eroded--	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
65G: Lindley-----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
75: Givin-----	C	Medium								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
76B: Ladoga-----	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
76C: Ladoga-----	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
76C2: Ladoga, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
76D: Ladoga-----	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
76D2: Ladoga, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
76D3: Ladoga, severely eroded---	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
76E2: Ladoga, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
76E3: Ladoga, severely eroded---	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
80B: Clinton-----	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80C: Clinton-----	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80C2: Clinton, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
80D: Clinton-----	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80D2: Clinton, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80D3: Clinton, severely eroded--	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
80E2: Clinton, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80E3: Clinton, severely eroded--	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
80F2: Clinton, moderately eroded	B	High								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
83B: Kenyon-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
83C: Kenyon-----	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
83C2: Kenyon, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
83D2: Kenyon, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
88: Nevin, rarely flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Rare
			March	1.5-4.0	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.5-4.0	>6.0	---	---	None	Brief	Rare
			June	2.0-4.5	>6.0	---	---	None	Brief	Rare
			July	3.0-5.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	4.0-6.5	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	2.5-5.0	>6.0	---	---	None	Brief	Rare
			December	3.0-5.5	>6.0	---	---	None	---	None
93D2: Shelby, moderately eroded	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
93D2: Adair, moderately eroded--	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
93D3: Shelby, severely eroded---	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Adair, severely eroded----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
93E2: Shelby, moderately eroded	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Adair, moderately eroded--	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
119: Muscatine-----	B	Low	January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
120B: Tama-----	B	Low		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
120C: Tama-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
120C2: Tama, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
120D2: Tama, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
120D3: Tama, severely eroded-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
120E2: Tama, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
122: Sperry-----	C/D	Medium								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	0.0-1.0	Long	Frequent	---	None
			March	0.5-2.0	>6.0	0.0-1.0	Long	Frequent	---	None
			April	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	---	None
			May	0.5-2.0	>6.0	0.0-1.0	Long	Frequent	---	None
			June	1.0-2.0	>6.0	0.0-1.0	Long	Frequent	---	None
			July	2.0-3.5	>6.0	0.0-1.0	Long	Frequent	---	None
			August	2.5-3.5	>6.0	0.0-1.0	Long	Frequent	---	None
			September	3.0-4.0	>6.0	0.0-1.0	Long	Frequent	---	None
			October	2.5-3.5	>6.0	0.0-1.0	Long	Frequent	---	None
			November	1.5-3.0	>6.0	0.0-1.0	Long	Frequent	---	None
			December	2.0-3.5	>6.0	---	---	None	---	None
133: Colo, occasionally flooded	B/D	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None
133+: Colo, occasionally flooded, overwash-----	B/D	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
162B: Downs-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
162C: Downs-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
162C2: Downs, moderately eroded--	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
162D2: Downs, moderately eroded--	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
162D3: Downs, severely eroded----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
162E2: Downs, moderately eroded--	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
162E3: Downs, severely eroded----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163B: Fayette-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163C: Fayette-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
163C2: Fayette, moderately eroded	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163D: Fayette-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163D2: Fayette, moderately eroded	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
163D3: Fayette, severely eroded--	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163E: Fayette-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163E2: Fayette, moderately eroded	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
163E3: Fayette, severely eroded--	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163F: Fayette-----	B	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163F2: Fayette, moderately eroded	B	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
163F3: Fayette, severely eroded--	B	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
163G: Fayette-----	B	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
165: Stronghurst-----	B	Low	January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
171C2: Bassett, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
171D2: Bassett, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
171D3: Bassett, severely eroded--	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
171E2: Bassett, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
171E3: Bassett, severely eroded--	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
172: Wabash, occasionally flooded-----	D	Very high								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
175: Dickinson-----	A	Very low		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
175B: Dickinson-----	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
175C: Dickinson-----	A	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
178: Waukee-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
178B: Waukee-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
178C: Waukee-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
179D2: Gara, moderately eroded---	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
179D3: Gara, severely eroded-----	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
179E2: Gara, moderately eroded---	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
179E3: Gara, severely eroded-----	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
179F2: Gara, moderately eroded---	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
179F3: Gara, severely eroded-----	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
180: Keomah-----	C	Medium								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
192D2: Adair, moderately eroded--	C	Very high								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
192D3: Adair, severely eroded----	C	Very high								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
220: Nodaway, occasionally flooded-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Brief	Occasional
			March	4.5-6.5	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.5-6.5	>6.0	---	---	None	Brief	Occasional
			June	5.0-6.7	>6.0	---	---	None	Brief	Occasional
			July	6.0-6.7	>6.0	---	---	None	Brief	Occasional
			August	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			September	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			October	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			November	5.5-6.7	>6.0	---	---	None	Brief	Occasional
			December	6.0-6.7	>6.0	---	---	None	---	None
279: Taintor-----	C/D	Medium								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	---	None
			March	0.5-2.0	>6.0	---	---	None	---	None
			April	0.0-1.0	>6.0	---	---	None	---	None
			May	0.5-2.0	>6.0	---	---	None	---	None
			June	1.0-2.0	>6.0	---	---	None	---	None
			July	2.0-3.5	>6.0	---	---	None	---	None
			August	2.5-3.5	>6.0	---	---	None	---	None
			September	3.0-4.0	>6.0	---	---	None	---	None
			October	2.5-3.5	>6.0	---	---	None	---	None
			November	1.5-3.0	>6.0	---	---	None	---	None
			December	2.0-3.0	>6.0	---	---	None	---	None
280: Mahaska-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
281B: Otley-----	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None
281C: Otley-----	B	Medium								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None
281C2: Otley, moderately eroded--	B	Medium								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
281D2: Otley, moderately eroded--	B	Medium								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None
281D3: Otley, severely eroded----	B	Medium								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None
281E2: Otley, moderately eroded--	B	Medium								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
291: Atterberry-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
293C: Fayette-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea-----	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
293C: Tell-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
293D: Fayette-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
293D: Tell-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
293D2: Fayette, moderately eroded	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea, moderately eroded	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
293D2: Tell, moderately eroded---	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
293E: Fayette-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
293E: Tell-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
293E2: Fayette, moderately eroded	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea, moderately eroded	A	Very low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
293E2: Tell, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
293G: Fayette-----	B	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Chelsea-----	A	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
293G: Tell-----	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
353B: Tell-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
353C: Tell-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
353C2: Tell, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
353D2: Tell, moderately eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
377B: Dinsdale-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
377C: Dinsdale-----	B	Medium	January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
420: Tama, terrace-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
420B: Tama, terrace-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
422: Amana, occasionally flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			March	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.5	>6.0	---	---	None	Brief	Occasional
			July	3.0-5.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	4.0-6.5	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			December	3.0-5.5	>6.0	---	---	None	---	None
424D2: Lindley, moderately eroded	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Keswick, moderately eroded	C	Very high								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
424E2: Lindley, moderately eroded	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Keswick, moderately eroded	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
424E3: Lindley, severely eroded--	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
424E3: Keswick, severely eroded--	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
424F2: Lindley, moderately eroded	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Keswick, moderately eroded	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
425D2: Keswick, moderately eroded	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
425D3: Keswick, severely eroded--	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
428B: Ely-----	B	Low	January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
430: Ackmore, occasionally flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			March	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.5	>6.0	---	---	None	Brief	Occasional
			July	3.0-5.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	4.0-6.5	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			December	3.0-5.5	>6.0	---	---	None	---	None
450: Pillot-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
450B: Pillot-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
450C: Pillot-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
453: Tuskeego, rarely flooded--	C/D	Very high								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Rare
			March	0.5-2.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.5-2.0	>6.0	---	---	None	Brief	Rare
			June	1.0-2.0	>6.0	---	---	None	Brief	Rare
			July	2.0-3.5	>6.0	---	---	None	Brief	Rare
			August	2.5-3.5	>6.0	---	---	None	Brief	Rare
			September	3.0-4.0	>6.0	---	---	None	Brief	Rare
			October	2.5-3.5	>6.0	---	---	None	Brief	Rare
			November	1.5-3.0	>6.0	---	---	None	Brief	Rare
			December	2.0-3.5	>6.0	---	---	None	---	None
462B: Downs, terrace-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
463B: Fayette, terrace-----	B	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
463C2: Fayette, moderately eroded, terrace-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
463D2: Fayette, moderately eroded, terrace-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
463D3: Fayette, severely eroded, terrace-----	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
463E2: Fayette, moderately eroded, terrace-----	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
463E3: Fayette, severely eroded, terrace-----	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
463F2: Fayette, moderately eroded, terrace-----	B	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
463F3: Fayette, severely eroded, terrace-----	B	High		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
484: Lawson, occasionally flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			March	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.5	>6.0	---	---	None	Brief	Occasional
			July	3.0-5.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	4.0-6.5	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
587: Chequest, occasionally flooded-----	C	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None
587+: Chequest, occasionally flooded, overwash-----	C	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			March	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.5-2.0	>6.0	---	---	None	Brief	Occasional
			June	1.0-2.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			September	3.0-4.0	>6.0	---	---	None	Brief	Occasional
			October	2.5-3.5	>6.0	---	---	None	Brief	Occasional
			November	1.5-3.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-3.5	>6.0	---	---	None	---	None
626: Hayfield-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	3.0-5.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
663D2: Seaton, moderately eroded	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
663E2: Seaton, moderately eroded	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
663E3: Seaton, severely eroded---	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
663F2: Seaton, moderately eroded	B	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
687: Watkins, rarely flooded---	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	---	None
687B: Watkins, rarely flooded---	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
688: Koszta, rarely flooded----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Rare
			March	1.5-4.0	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.5-4.0	>6.0	---	---	None	Brief	Rare
			June	2.0-4.5	>6.0	---	---	None	Brief	Rare
			July	3.0-5.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	4.0-6.5	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	2.5-5.0	>6.0	---	---	None	Brief	Rare
			December	3.0-5.5	>6.0	---	---	None	---	None
771B: Waubeek-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
771C2: Waubeek, moderately eroded	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
792D2: Armstrong, moderately eroded-----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
876B: Ladoga, terrace-----	B	Medium	January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
876C: Ladoga, terrace-----	B	High	January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
876C2: Ladoga, moderately eroded, terrace-----	B	High	January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
876D2: Ladoga, moderately eroded, terrace-----	B	High	January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	---	None
			March	4.5-6.5	>6.0	---	---	None	---	None
			April	4.0-6.0	>6.0	---	---	None	---	None
			May	4.5-6.5	>6.0	---	---	None	---	None
			June	5.0-6.7	>6.0	---	---	None	---	None
			July	6.0-6.7	>6.0	---	---	None	---	None
			August	6.5-6.7	>6.0	---	---	None	---	None
			September	6.5-6.7	>6.0	---	---	None	---	None
			October	6.5-6.7	>6.0	---	---	None	---	None
			November	5.5-6.7	>6.0	---	---	None	---	None
			December	6.0-6.7	>6.0	---	---	None	---	None
881B: Otley, terrace-----	B	Low	January	4.0-6.0	>6.0	---	---	None	---	None
			February	3.5-5.5	>6.0	---	---	None	---	None
			March	2.5-4.5	>6.0	---	---	None	---	None
			April	2.0-4.0	>6.0	---	---	None	---	None
			May	2.5-4.5	>6.0	---	---	None	---	None
			June	3.0-5.0	>6.0	---	---	None	---	None
			July	4.0-6.0	>6.0	---	---	None	---	None
			August	4.5-6.5	>6.0	---	---	None	---	None
			September	5.0-6.7	>6.0	---	---	None	---	None
			October	4.5-6.5	>6.0	---	---	None	---	None
			November	3.5-5.5	>6.0	---	---	None	---	None
			December	4.0-6.0	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
911B: Colo-----	B/D	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	---	None
			March	0.5-2.0	>6.0	---	---	None	---	None
			April	0.0-1.0	>6.0	---	---	None	---	None
			May	0.5-1.5	>6.0	---	---	None	---	None
			June	1.0-2.0	>6.0	---	---	None	---	None
			July	2.0-3.0	>6.0	---	---	None	---	None
			August	2.5-3.5	>6.0	---	---	None	---	None
			September	3.0-4.0	>6.0	---	---	None	---	None
			October	2.5-3.5	>6.0	---	---	None	---	None
			November	1.5-3.0	>6.0	---	---	None	---	None
			December	2.0-3.5	>6.0	---	---	None	---	None
Ely-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
993D2: Gara, moderately eroded---	C	High								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
993D2: Armstrong, moderately eroded-----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
993E2: Gara, moderately eroded---	C	High	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Armstrong, moderately eroded-----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
993F2: Gara, moderately eroded---	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Armstrong, moderately eroded-----	C	Very high	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	1.5-2.0	2.5-2.5	---	---	None	---	None
			April	1.0-1.3	2.5-2.5	---	---	None	---	None
			May	1.3-1.5	2.5-2.5	---	---	None	---	None
			June	1.5-2.0	2.5-2.5	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	1.0-1.5	2.5-2.5	---	---	None	---	None
			November	1.5-2.0	2.5-2.5	---	---	None	---	None
			December	1.5-2.0	2.5-2.5	---	---	None	---	None
1160: Walford, terrace-----	B/D	Low	January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	---	None
			March	0.5-2.0	>6.0	---	---	None	---	None
			April	0.0-1.0	>6.0	---	---	None	---	None
			May	0.5-2.0	>6.0	---	---	None	---	None
			June	1.0-2.0	>6.0	---	---	None	---	None
			July	2.0-3.5	>6.0	---	---	None	---	None
			August	2.5-3.5	>6.0	---	---	None	---	None
			September	3.0-4.0	>6.0	---	---	None	---	None
			October	2.5-3.5	>6.0	---	---	None	---	None
			November	1.5-3.0	>6.0	---	---	None	---	None
			December	2.0-3.0	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1220: Nodaway, frequently flooded, channeled-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Long	Frequent
			March	4.5-6.5	>6.0	---	---	None	Long	Frequent
			April	4.0-6.0	>6.0	---	---	None	Long	Frequent
			May	4.5-6.5	>6.0	---	---	None	Long	Frequent
			June	5.0-6.7	>6.0	---	---	None	Long	Frequent
			July	6.0-6.7	>6.0	---	---	None	Long	Frequent
			August	6.5-6.7	>6.0	---	---	None	Long	Frequent
			September	6.5-6.7	>6.0	---	---	None	Long	Frequent
			October	6.5-6.7	>6.0	---	---	None	Long	Frequent
			November	5.5-6.7	>6.0	---	---	None	Long	Frequent
			December	6.0-6.7	>6.0	---	---	None	---	None
1291: Atterberry, terrace-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	---	None
			March	1.5-4.0	>6.0	---	---	None	---	None
			April	1.0-3.5	>6.0	---	---	None	---	None
			May	1.5-4.0	>6.0	---	---	None	---	None
			June	2.0-4.5	>6.0	---	---	None	---	None
			July	3.0-5.5	>6.0	---	---	None	---	None
			August	3.5-6.0	>6.0	---	---	None	---	None
			September	4.0-6.5	>6.0	---	---	None	---	None
			October	3.5-6.0	>6.0	---	---	None	---	None
			November	2.5-5.0	>6.0	---	---	None	---	None
			December	3.0-5.5	>6.0	---	---	None	---	None
1354: Aquents, ponded-----	---	---								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			March	0.5-2.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			April	0.0-1.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			May	0.5-2.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			June	1.0-2.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			July	2.0-3.5	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			August	2.5-3.5	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			September	3.0-4.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			October	2.5-3.5	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			November	1.5-3.0	>6.0	0.0-1.0	Very long	Frequent	Long	Frequent
			December	2.0-3.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1442B:										
Tama-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Sparta-----	A	Very low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Pilot-----	B	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1442C: Tama-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Sparta-----	A	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Pillot-----	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1442C2: Tama, moderately eroded---	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Sparta, moderately eroded	A	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Pillot, moderately eroded	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
1442D2: Tama, moderately eroded---	B	Medium		Ft	Ft	Ft				
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Sparta, moderately eroded	A	Low								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Pillot, moderately eroded	B	Medium								
			January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1442E2:										
Tama, moderately eroded---	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Sparta, moderately eroded	A	Low	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Pillot, moderately eroded	B	Medium	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1540: Quiver, frequently flooded	B/D	Low								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Long	Frequent
			March	0.5-2.0	>6.0	---	---	None	Long	Frequent
			April	0.0-1.0	>6.0	---	---	None	Long	Frequent
			May	0.5-2.0	>6.0	---	---	None	Long	Frequent
			June	1.0-2.0	>6.0	---	---	None	Long	Frequent
			July	2.0-3.5	>6.0	---	---	None	Long	Frequent
			August	2.5-3.5	>6.0	---	---	None	Long	Frequent
			September	3.0-4.0	>6.0	---	---	None	Long	Frequent
			October	2.5-3.5	>6.0	---	---	None	Long	Frequent
			November	1.5-3.0	>6.0	---	---	None	Long	Frequent
			December	2.0-3.5	>6.0	---	---	None	---	None
Zook, frequently flooded--	C/D	Medium								
			January	2.0-3.5	>6.0	---	---	None	---	None
			February	1.5-3.0	>6.0	---	---	None	Long	Frequent
			March	0.5-2.0	>6.0	---	---	None	Long	Frequent
			April	0.0-1.0	>6.0	---	---	None	Long	Frequent
			May	0.5-2.0	>6.0	---	---	None	Long	Frequent
			June	1.0-2.0	>6.0	---	---	None	Long	Frequent
			July	2.0-3.5	>6.0	---	---	None	Long	Frequent
			August	2.5-3.5	>6.0	---	---	None	Long	Frequent
			September	3.0-4.0	>6.0	---	---	None	Long	Frequent
			October	2.5-3.5	>6.0	---	---	None	Long	Frequent
			November	1.5-3.0	>6.0	---	---	None	Long	Frequent
			December	2.0-3.5	>6.0	---	---	None	---	None
Klum, frequently flooded--	A	Very low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Long	Frequent
			March	4.5-6.5	>6.0	---	---	None	Long	Frequent
			April	4.0-6.0	>6.0	---	---	None	Long	Frequent
			May	4.5-6.5	>6.0	---	---	None	Long	Frequent
			June	5.0-6.7	>6.0	---	---	None	Long	Frequent
			July	6.0-6.7	>6.0	---	---	None	Long	Frequent
			August	6.5-6.7	>6.0	---	---	None	Long	Frequent
			September	6.5-6.7	>6.0	---	---	None	Long	Frequent
			October	6.5-6.7	>6.0	---	---	None	Long	Frequent
			November	5.5-6.7	>6.0	---	---	None	Long	Frequent
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
2219: Ella, rarely flooded-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Brief	Rare
			March	4.5-6.5	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.5-6.5	>6.0	---	---	None	Brief	Rare
			June	5.0-6.7	>6.0	---	---	None	Brief	Rare
			July	6.0-6.7	>6.0	---	---	None	Brief	Rare
			August	6.5-6.7	>6.0	---	---	None	Brief	Rare
			September	6.5-6.7	>6.0	---	---	None	Brief	Rare
			October	6.5-6.7	>6.0	---	---	None	Brief	Rare
			November	5.5-6.7	>6.0	---	---	None	Brief	Rare
			December	6.0-6.7	>6.0	---	---	None	---	None
2219B: Ella, rarely flooded-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Brief	Rare
			March	4.5-6.5	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.5-6.5	>6.0	---	---	None	Brief	Rare
			June	5.0-6.7	>6.0	---	---	None	Brief	Rare
			July	6.0-6.7	>6.0	---	---	None	Brief	Rare
			August	6.5-6.7	>6.0	---	---	None	Brief	Rare
			September	6.5-6.7	>6.0	---	---	None	Brief	Rare
			October	6.5-6.7	>6.0	---	---	None	Brief	Rare
			November	5.5-6.7	>6.0	---	---	None	Brief	Rare
			December	6.0-6.7	>6.0	---	---	None	---	None
2219C2: Ella, moderately eroded---	B	Medium								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Brief	Rare
			March	4.5-6.5	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.5-6.5	>6.0	---	---	None	Brief	Rare
			June	5.0-6.7	>6.0	---	---	None	Brief	Rare
			July	6.0-6.7	>6.0	---	---	None	Brief	Rare
			August	6.5-6.7	>6.0	---	---	None	Brief	Rare
			September	6.5-6.7	>6.0	---	---	None	Brief	Rare
			October	6.5-6.7	>6.0	---	---	None	Brief	Rare
			November	5.5-6.7	>6.0	---	---	None	Brief	Rare
			December	6.0-6.7	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
2422: Amana, occasionally flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			March	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.5	>6.0	---	---	None	Brief	Occasional
			July	3.0-5.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	4.0-6.5	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			December	3.0-5.5	>6.0	---	---	None	---	None
Nodaway, occasionally flooded-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Brief	Occasional
			March	4.5-6.5	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.5-6.5	>6.0	---	---	None	Brief	Occasional
			June	5.0-6.7	>6.0	---	---	None	Brief	Occasional
			July	6.0-6.7	>6.0	---	---	None	Brief	Occasional
			August	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			September	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			October	6.5-6.7	>6.0	---	---	None	Brief	Occasional
			November	5.5-6.7	>6.0	---	---	None	Brief	Occasional
			December	6.0-6.7	>6.0	---	---	None	---	None
Lawson, occasionally flooded-----	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			March	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.5-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.5	>6.0	---	---	None	Brief	Occasional
			July	3.0-5.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	4.0-6.5	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.5-5.0	>6.0	---	---	None	Brief	Occasional
			December	3.0-5.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
4946.										
Udorthents-----	---	---	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
Interstate highway-----	---	---	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None
5010.										
Pits, sand and gravel										
5040:										
Udorthents-----	---	---	January	---	---	---	---	None	---	None
			February	---	---	---	---	None	---	None
			March	---	---	---	---	None	---	None
			April	---	---	---	---	None	---	None
			May	---	---	---	---	None	---	None
			June	---	---	---	---	None	---	None
			July	---	---	---	---	None	---	None
			August	---	---	---	---	None	---	None
			September	---	---	---	---	None	---	None
			October	---	---	---	---	None	---	None
			November	---	---	---	---	None	---	None
			December	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Surface water depth	Ponding		Flooding	
				Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
6220: Nodaway, frequently flooded-----	B	Low								
			January	6.0-6.7	>6.0	---	---	None	---	None
			February	5.5-6.7	>6.0	---	---	None	Long	Frequent
			March	4.5-6.5	>6.0	---	---	None	Long	Frequent
			April	4.0-6.0	>6.0	---	---	None	Long	Frequent
			May	4.5-6.5	>6.0	---	---	None	Long	Frequent
			June	5.0-6.7	>6.0	---	---	None	Long	Frequent
			July	6.0-6.7	>6.0	---	---	None	Long	Frequent
			August	6.5-6.7	>6.0	---	---	None	Long	Frequent
			September	6.5-6.7	>6.0	---	---	None	Long	Frequent
			October	6.5-6.7	>6.0	---	---	None	Long	Frequent
			November	5.5-6.7	>6.0	---	---	None	Long	Frequent
			December	6.0-6.7	>6.0	---	---	None	---	None
6422: Amana, frequently flooded	B	Low								
			January	3.0-5.5	>6.0	---	---	None	---	None
			February	2.5-5.0	>6.0	---	---	None	Long	Frequent
			March	1.5-4.0	>6.0	---	---	None	Long	Frequent
			April	1.0-3.5	>6.0	---	---	None	Long	Frequent
			May	1.5-4.0	>6.0	---	---	None	Long	Frequent
			June	2.0-4.5	>6.0	---	---	None	Long	Frequent
			July	3.0-5.5	>6.0	---	---	None	Long	Frequent
			August	3.5-6.0	>6.0	---	---	None	Long	Frequent
			September	4.0-6.5	>6.0	---	---	None	Long	Frequent
			October	3.5-6.0	>6.0	---	---	None	Long	Frequent
			November	2.5-5.0	>6.0	---	---	None	Long	Frequent
			December	3.0-5.5	>6.0	---	---	None	---	None
AW. Animal waste lagoon										
SL. Sewage lagoon										
W. Water										

Soil Features

The table described in this section gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
5B:			
Ackmore-----	High	High	Low
Colo-----	High	High	Moderate
7:			
Wiota, rarely flooded--	High	Moderate	Moderate
7B:			
Wiota, rarely flooded--	High	Moderate	Moderate
8B:			
Judson-----	High	Moderate	Low
24C2:			
Shelby, moderately eroded-----	Moderate	Moderate	Moderate
24D2:			
Shelby, moderately eroded-----	Moderate	Moderate	Moderate
24D3:			
Shelby, severely eroded	Moderate	Moderate	Moderate
24E2:			
Shelby, moderately eroded-----	Moderate	Moderate	Moderate
24E3:			
Shelby, severely eroded	Moderate	Moderate	Moderate
41:			
Sparta-----	Low	Low	Moderate
41B:			
Sparta-----	Low	Low	Moderate
41C:			
Sparta-----	Low	Low	Moderate
41D:			
Sparta-----	Low	Low	Moderate
43:			
Bremer, rarely flooded	High	Moderate	Moderate
51:			
Vesser, occasionally flooded-----	High	High	Moderate
54:			
Zook, occasionally flooded-----	High	High	Moderate
54+:			
Zook, occasionally flooded, overwash----	High	High	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
63C: Chelsea-----	Low	Low	Low
63E: Chelsea-----	Low	Low	Low
63G: Chelsea-----	Low	Low	Low
65D2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
65D3: Lindley, severely eroded-----	Moderate	Moderate	Moderate
65E2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
65E3: Lindley, severely eroded-----	Moderate	Moderate	Moderate
65F: Lindley-----	Moderate	Moderate	Moderate
65F2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
65F3: Lindley, severely eroded-----	Moderate	Moderate	Moderate
65G: Lindley-----	Moderate	Moderate	Moderate
75: Givin-----	High	High	Moderate
76B: Ladoga-----	Moderate	Moderate	Moderate
76C: Ladoga-----	Moderate	Moderate	Moderate
76C2: Ladoga, moderately eroded-----	Moderate	Moderate	Moderate
76D: Ladoga-----	Moderate	Moderate	Moderate
76D2: Ladoga, moderately eroded-----	Moderate	Moderate	Moderate
76D3: Ladoga, severely eroded	Moderate	Moderate	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
76E2: Ladoga, moderately eroded-----	Moderate	Moderate	Moderate
76E3: Ladoga, severely eroded	Moderate	Moderate	Moderate
80B: Clinton-----	Moderate	Moderate	Moderate
80C: Clinton-----	Moderate	Moderate	Moderate
80C2: Clinton, moderately eroded-----	Moderate	Moderate	Moderate
80D: Clinton-----	Moderate	Moderate	Moderate
80D2: Clinton, moderately eroded-----	Moderate	Moderate	Moderate
80D3: Clinton, severely eroded-----	Moderate	Moderate	Moderate
80E2: Clinton, moderately eroded-----	Moderate	Moderate	Moderate
80E3: Clinton, severely eroded-----	Moderate	Moderate	Moderate
80F2: Clinton, moderately eroded-----	Moderate	Moderate	Moderate
83B: Kenyon-----	Moderate	Moderate	Moderate
83C: Kenyon-----	Moderate	Moderate	Moderate
83C2: Kenyon, moderately eroded-----	Moderate	Moderate	Moderate
83D2: Kenyon, moderately eroded-----	Moderate	Moderate	Moderate
88: Nevin, rarely flooded--	High	High	Low
93D2: Shelby, moderately eroded-----	Moderate	Moderate	Moderate
Adair, moderately eroded-----	High	High	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
93D3: Shelby, severely eroded	Moderate	Moderate	Moderate
Adair, severely eroded	High	High	Moderate
93E2: Shelby, moderately eroded-----	Moderate	Moderate	Moderate
Adair, moderately eroded-----	High	High	Moderate
119: Muscatine-----	High	High	Moderate
120B: Tama-----	High	Moderate	Moderate
120C: Tama-----	High	Moderate	Moderate
120C2: Tama, moderately eroded	High	Moderate	Moderate
120D2: Tama, moderately eroded	High	Moderate	Moderate
120D3: Tama, severely eroded--	High	Moderate	Moderate
120E2: Tama, moderately eroded	High	Moderate	Moderate
122: Sperry-----	High	High	Moderate
133: Colo, occasionally flooded-----	High	High	Moderate
133+: Colo, occasionally flooded, overwash-----	High	High	Moderate
162B: Downs-----	High	Moderate	Moderate
162C: Downs-----	High	Moderate	Moderate
162C2: Downs, moderately eroded-----	High	Moderate	Moderate
162D2: Downs, moderately eroded-----	High	Moderate	Moderate
162D3: Downs, severely eroded	High	Moderate	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
162E2: Downs, moderately eroded-----	High	Moderate	Moderate
162E3: Downs, severely eroded	High	Moderate	Moderate
163B: Fayette-----	High	Moderate	Moderate
163C: Fayette-----	High	Moderate	Moderate
163C2: Fayette, moderately eroded-----	High	Moderate	Moderate
163D: Fayette-----	High	Moderate	Moderate
163D2: Fayette, moderately eroded-----	High	Moderate	Moderate
163D3: Fayette, severely eroded-----	High	Moderate	Moderate
163E: Fayette-----	High	Moderate	Moderate
163E2: Fayette, moderately eroded-----	High	Moderate	Moderate
163E3: Fayette, severely eroded-----	High	Moderate	Moderate
163F: Fayette-----	High	Moderate	Moderate
163F2: Fayette, moderately eroded-----	High	Moderate	Moderate
163F3: Fayette, severely eroded-----	High	Moderate	Moderate
163G: Fayette-----	High	Moderate	Moderate
165: Stronghurst-----	High	High	Moderate
171C2: Bassett, moderately eroded-----	Moderate	Moderate	Moderate
171D2: Bassett, moderately eroded-----	Moderate	Moderate	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
171D3: Bassett, severely eroded-----	Moderate	Moderate	Moderate
171E2: Bassett, moderately eroded-----	Moderate	Moderate	Moderate
171E3: Bassett, severely eroded-----	Moderate	Moderate	Moderate
172: Wabash, occasionally flooded-----	Moderate	High	Moderate
175: Dickinson-----	Moderate	Low	Moderate
175B: Dickinson-----	Moderate	Low	Moderate
175C: Dickinson-----	Moderate	Low	Moderate
178: Waukee-----	Low	Low	Moderate
178B: Waukee-----	Low	Low	Moderate
178C: Waukee-----	Low	Low	Moderate
179D2: Gara, moderately eroded	Moderate	Moderate	Moderate
179D3: Gara, severely eroded--	Moderate	Moderate	Moderate
179E2: Gara, moderately eroded	Moderate	Moderate	Moderate
179E3: Gara, severely eroded--	Moderate	Moderate	Moderate
179F2: Gara, moderately eroded	Moderate	Moderate	Moderate
179F3: Gara, severely eroded--	Moderate	Moderate	Moderate
180: Keomah-----	High	High	Moderate
192D2: Adair, moderately eroded-----	High	High	Moderate
192D3: Adair, severely eroded	High	High	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
220: Nodaway, occasionally flooded-----	High	Moderate	Low
279: Taintor-----	High	High	Moderate
280: Mahaska-----	High	High	Moderate
281B: Otley-----	Moderate	Moderate	Moderate
281C: Otley-----	Moderate	Moderate	Moderate
281C2: Otley, moderately eroded-----	Moderate	Moderate	Moderate
281D2: Otley, moderately eroded-----	Moderate	Moderate	Moderate
281D3: Otley, severely eroded	Moderate	Moderate	Moderate
281E2: Otley, moderately eroded-----	Moderate	Moderate	Moderate
291: Atterberry-----	High	High	Moderate
293C: Fayette-----	High	Moderate	Moderate
Chelsea-----	Low	Low	Low
Tell-----	High	Moderate	Moderate
293D: Fayette-----	High	Moderate	Moderate
Chelsea-----	Low	Low	Low
Tell-----	High	Moderate	Moderate
293D2: Fayette, moderately eroded-----	High	Moderate	Moderate
Chelsea, moderately eroded-----	Low	Low	Low
Tell, moderately eroded	High	Moderate	Moderate
293E: Fayette-----	High	Moderate	Moderate
Chelsea-----	Low	Low	Low
Tell-----	High	Moderate	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
293E2: Fayette, moderately eroded-----	High	Moderate	Moderate
Chelsea, moderately eroded-----	Low	Low	Low
Tell, moderately eroded	High	Moderate	Moderate
293G: Fayette-----	High	Moderate	Moderate
Chelsea-----	Low	Low	Low
Tell-----	High	Moderate	Moderate
353B: Tell-----	High	Moderate	Moderate
353C: Tell-----	High	Moderate	Moderate
353C2: Tell, moderately eroded	High	Moderate	Moderate
353D2: Tell, moderately eroded	High	Moderate	Moderate
377B: Dinsdale-----	High	Moderate	Moderate
377C: Dinsdale-----	High	Moderate	Moderate
420: Tama, terrace-----	High	Moderate	Moderate
420B: Tama, terrace-----	High	Moderate	Moderate
422: Amana, occasionally flooded-----	High	High	Moderate
424D2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
Keswick, moderately eroded-----	High	High	Moderate
424E2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
Keswick, moderately eroded-----	High	High	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
424E3: Lindley, severely eroded-----	Moderate	Moderate	Moderate
Keswick, severely eroded-----	High	High	Moderate
424F2: Lindley, moderately eroded-----	Moderate	Moderate	Moderate
Keswick, moderately eroded-----	High	High	Moderate
425D2: Keswick, moderately eroded-----	High	High	Moderate
425D3: Keswick, severely eroded-----	High	High	Moderate
428B: Ely-----	High	High	Moderate
430: Ackmore, occasionally flooded-----	High	High	Low
450: Pillot-----	High	Moderate	Moderate
450B: Pillot-----	High	Moderate	Moderate
450C: Pillot-----	High	Moderate	Moderate
453: Tuskeego, rarely flooded-----	Moderate	High	Moderate
462B: Downs, terrace-----	High	Moderate	Moderate
463B: Fayette, terrace-----	High	Moderate	Moderate
463C2: Fayette, moderately eroded, terrace-----	High	Moderate	Moderate
463D2: Fayette, moderately eroded, terrace-----	High	Moderate	Moderate
463D3: Fayette, severely eroded, terrace-----	High	Moderate	Moderate
463E2: Fayette, moderately eroded, terrace-----	High	Moderate	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
463E3: Fayette, severely eroded, terrace-----	High	Moderate	Moderate
463F2: Fayette, moderately eroded, terrace-----	High	Moderate	Moderate
463F3: Fayette, severely eroded, terrace-----	High	Moderate	Moderate
484: Lawson, occasionally flooded-----	High	Moderate	Low
587: Chequest, occasionally flooded-----	High	High	Moderate
587+: Chequest, occasionally flooded, overwash-----	High	High	Moderate
626: Hayfield-----	High	Low	Moderate
663D2: Seaton, moderately eroded-----	High	Low	Moderate
663E2: Seaton, moderately eroded-----	High	Low	Moderate
663E3: Seaton, severely eroded	High	Low	Moderate
663F2: Seaton, moderately eroded-----	High	Low	Moderate
687: Watkins, rarely flooded	High	Moderate	Moderate
687B: Watkins, rarely flooded	High	Moderate	Moderate
688: Koszta, rarely flooded	High	Moderate	Moderate
771B: Waubek-----	High	Moderate	Moderate
771C2: Waubek, moderately eroded-----	High	Moderate	Moderate
792D2: Armstrong, moderately eroded-----	High	High	Moderate

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
876B: Ladoga, terrace-----	Moderate	Moderate	Moderate
876C: Ladoga, terrace-----	Moderate	Moderate	Moderate
876C2: Ladoga, moderately eroded, terrace-----	Moderate	Moderate	Moderate
876D2: Ladoga, moderately eroded, terrace-----	Moderate	Moderate	Moderate
881B: Otley, terrace-----	Moderate	Moderate	Moderate
911B: Colo-----	High	High	Moderate
Ely-----	High	High	Moderate
993D2: Gara, moderately eroded	Moderate	Moderate	Moderate
Armstrong, moderately eroded-----	High	High	Moderate
993E2: Gara, moderately eroded	Moderate	Moderate	Moderate
Armstrong, moderately eroded-----	High	High	Moderate
993F2: Gara, moderately eroded	Moderate	Moderate	Moderate
Armstrong, moderately eroded-----	High	High	Moderate
1160: Walford, terrace-----	High	High	Moderate
1220: Nodaway, frequently flooded, channeled----	High	Moderate	Low
1291: Atterberry, terrace----	High	High	Moderate
1354. Aquents, ponded			
1442B: Tama-----	High	Moderate	Moderate
Sparta-----	Low	Low	Moderate
Pillot-----	High	Moderate	Moderate

Soil Features--Continued

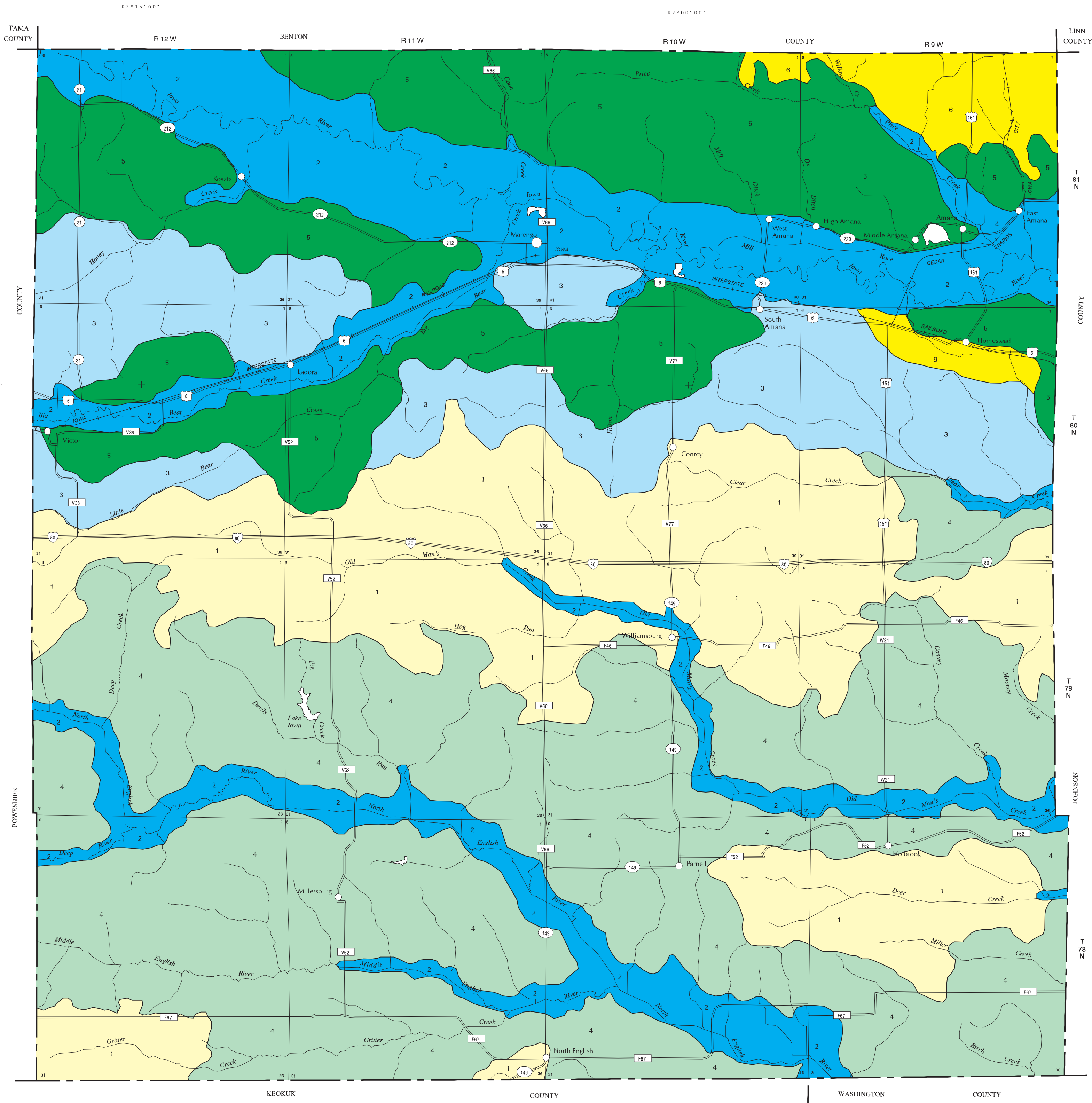
Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
1442C:			
Tama-----	High	Moderate	Moderate
Sparta-----	Low	Low	Moderate
Pillot-----	High	Moderate	Moderate
1442C2:			
Tama, moderately eroded	High	Moderate	Moderate
Sparta, moderately eroded-----	Low	Low	Moderate
Pillot, moderately eroded-----	High	Moderate	Moderate
1442D2:			
Tama, moderately eroded	High	Moderate	Moderate
Sparta, moderately eroded-----	Low	Low	Moderate
Pillot, moderately eroded-----	High	Moderate	Moderate
1442E2:			
Tama, moderately eroded	High	Moderate	Moderate
Sparta, moderately eroded-----	Low	Low	Moderate
Pillot, moderately eroded-----	High	Moderate	Moderate
1540:			
Quiver, frequently flooded-----	High	High	Low
Zook, frequently flooded-----	High	High	Moderate
Klum, frequently flooded-----	Moderate	Low	Low
2219:			
Ella, rarely flooded---	High	Low	Moderate
2219B:			
Ella, rarely flooded---	High	Low	Moderate
2219C2:			
Ella, moderately eroded	High	Low	Moderate
2422:			
Amana, occasionally flooded-----	High	High	Moderate
Nodaway, occasionally flooded-----	High	Moderate	Low
Lawson, occasionally flooded-----	High	Moderate	Low

Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
4946: Udorthents. Interstate highway.			
5010. Pits, sand and gravel			
5040. Udorthents			
6220: Nodaway, frequently flooded-----	High	Moderate	Low
6422: Amana, frequently flooded-----	High	High	Moderate
AW. Animal waste lagoon			
SL. Sewage lagoon			
W. Water			

NRCS Accessibility Statement

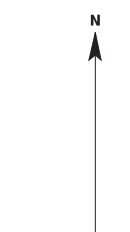
The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at <http://offices.sc.egov.usda.gov/locator/app>.



- LEGEND
- 1 Otley-Mahaska-Shelby association
 - 2 Colo-Nevin-Nodaway association
 - 3 Tama-Downs association
 - 4 Ladoga-Clinton-Lindley association
 - 5 Fayette-Downs association
 - 6 Dinsdale-Kenyon-Bassett association

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
IOWA AGRICULTURE AND HOME ECONOMICS EXPERIMENT STATION
COOPERATIVE EXTENSION SERVICE,
IOWA STATE UNIVERSITY
DIVISION OF SOIL CONSERVATION,
IOWA DEPARTMENT OF AGRICULTURE
AND LAND STEWARDSHIP

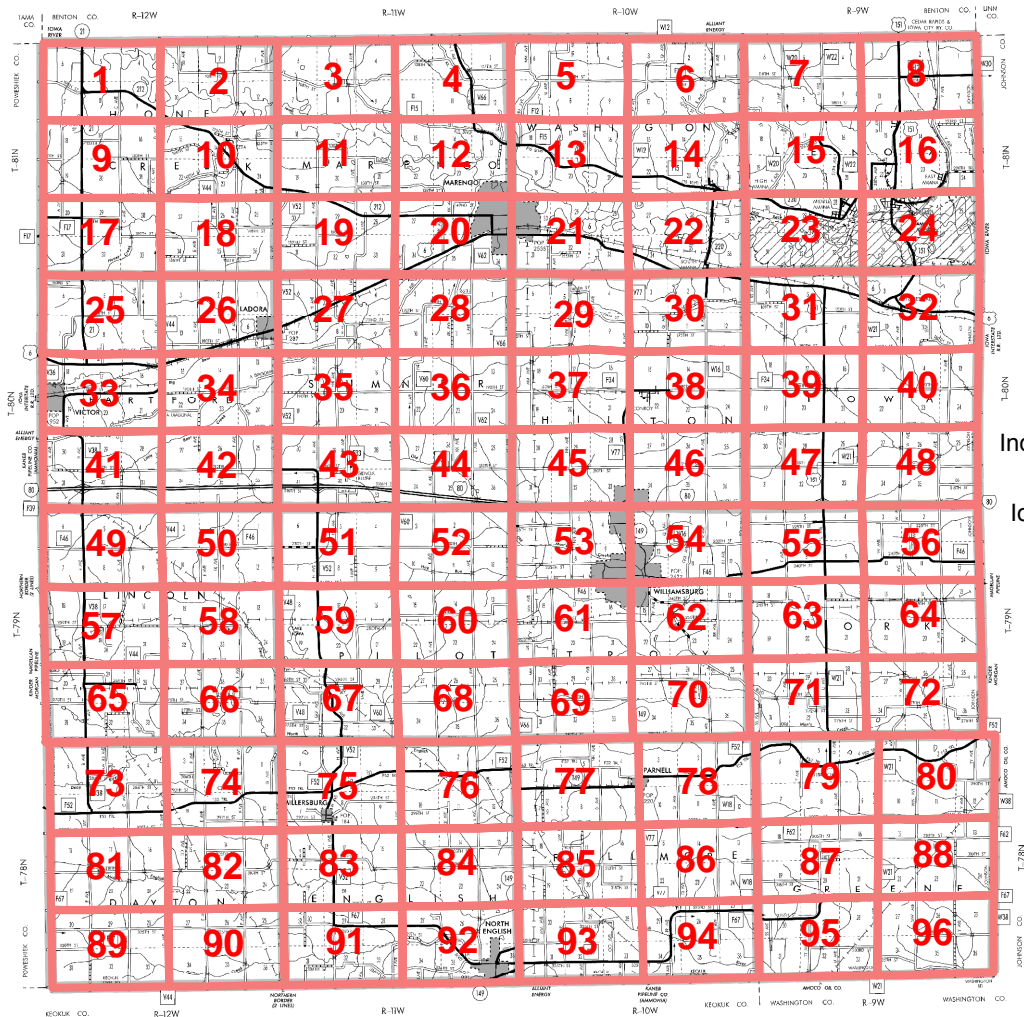
**GENERAL SOIL MAP
IOWA COUNTY, IOWA**

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:100000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



Index to Map Sheets

Iowa County, Iowa

IOWA COUNTY, IOWA

SOIL LEGEND

Map unit symbols consist of a combination of numbers and letters. The initial numbers represent the kind of soil. A capital letter following those numbers indicates the class of slope. Map unit symbols that do not have a slope class letter are for nearly level soils or for miscellaneous areas. A final number of 2 following the slope class letter indicates that the map unit is predominantly moderately eroded. A final number of 3 indicates that the map unit is predominantly severely eroded. A plus sign (+) is used to designate an overwash phase.

5B Ackmore-Colo complex, 2 to 5 percent slopes
7 Wiota silty clay loam, 0 to 2 percent slopes, rarely flooded
7B Wiota silty clay loam, 2 to 5 percent slopes, rarely flooded
8B Judson silty clay loam, 2 to 5 percent slopes
24C2 Shelby loam, 5 to 9 percent slopes, moderately eroded
24D2 Shelby loam, 9 to 14 percent slopes, moderately eroded
24D3 Shelby clay loam, 9 to 14 percent slopes, severely eroded
24E2 Shelby loam, 14 to 18 percent slopes, moderately eroded
24E3 Shelby clay loam, 14 to 18 percent slopes, severely eroded
41 Sparta loamy fine sand, 0 to 2 percent slopes
41B Sparta loamy fine sand, 2 to 5 percent slopes
41C Sparta loamy fine sand, 5 to 9 percent slopes
41D Sparta loamy fine sand, 9 to 14 percent slopes
43 Bremer silty clay loam, 0 to 2 percent slopes, rarely flooded
51 Vesser silt loam, 0 to 2 percent slopes, occasionally flooded
54 Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded
54+ Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
63C Chelsea loamy fine sand, 2 to 9 percent slopes
63E Chelsea loamy fine sand, 9 to 18 percent slopes
63G Chelsea loamy fine sand, 18 to 40 percent slopes
65D2 Lindley loam, 9 to 14 percent slopes, moderately eroded
65D3 Lindley clay loam, 9 to 14 percent slopes, severely eroded
65E2 Lindley loam, 14 to 18 percent slopes, moderately eroded
65E3 Lindley clay loam, 14 to 18 percent slopes, severely eroded
65F Lindley loam, 18 to 25 percent slopes
65F2 Lindley loam, 18 to 25 percent slopes, moderately eroded
65F3 Lindley clay loam, 18 to 25 percent slopes, severely eroded
65G Lindley loam, 25 to 40 percent slopes
75 Givin silt loam, 0 to 2 percent slopes
76B Ladoga silt loam, 2 to 5 percent slopes
76C Ladoga silt loam, 5 to 9 percent slopes
76C2 Ladoga silt loam, 5 to 9 percent slopes, moderately eroded
76D Ladoga silt loam, 9 to 14 percent slopes
76D2 Ladoga silt loam, 9 to 14 percent slopes, moderately eroded
76D3 Ladoga silty clay loam, 9 to 14 percent slopes, severely eroded
76E2 Ladoga silt loam, 14 to 18 percent slopes, moderately eroded
76E3 Ladoga silty clay loam, 14 to 18 percent slopes, severely eroded
80B Clinton silt loam, 2 to 5 percent slopes
80C Clinton silt loam, 5 to 9 percent slopes
80C2 Clinton silty clay loam, 5 to 9 percent slopes, moderately eroded
80D Clinton silt loam, 9 to 14 percent slopes
80D2 Clinton silty clay loam, 9 to 14 percent slopes, moderately eroded
80D3 Clinton silty clay loam, 9 to 14 percent slopes, severely eroded
80E2 Clinton silty clay loam, 14 to 18 percent slopes, moderately eroded
80E3 Clinton silty clay loam, 14 to 18 percent slopes, severely eroded
80F2 Clinton silty clay loam, 18 to 25 percent slopes, moderately eroded
83B Kenyon loam, 2 to 5 percent slopes
83C Kenyon loam, 5 to 9 percent slopes
83C2 Kenyon loam, 5 to 9 percent slopes, moderately eroded
83D2 Kenyon loam, 9 to 14 percent slopes, moderately eroded
88 Nevin silty clay loam, 0 to 2 percent slopes, rarely flooded
93D2 Shelby-Adair complex, 9 to 14 percent slopes, moderately eroded
93D3 Shelby-Adair complex, 9 to 14 percent slopes, severely eroded
93E2 Shelby-Adair complex, 14 to 18 percent slopes, moderately eroded
119 Muscatine silty clay loam, 0 to 2 percent slopes
120B Tama silty clay loam, 2 to 5 percent slopes
120C Tama silty clay loam, 5 to 9 percent slopes
120C2 Tama silty clay loam, 5 to 9 percent slopes, moderately eroded
120D2 Tama silty clay loam, 9 to 14 percent slopes, moderately eroded
120D3 Tama silty clay loam, 9 to 14 percent slopes, severely eroded
120E2 Tama silty clay loam, 14 to 18 percent slopes, moderately eroded
122 Sperry silt loam, 0 to 1 percent slopes, depressional
133 Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded
133+ Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
162B Downs silt loam, 2 to 5 percent slopes
162C Downs silt loam, 5 to 9 percent slopes
162C2 Downs silt loam, 5 to 9 percent slopes, moderately eroded
162D2 Downs silt loam, 9 to 14 percent slopes, moderately eroded
162D3 Downs silty clay loam, 9 to 14 percent slopes, severely eroded
162E2 Downs silt loam, 14 to 18 percent slopes, moderately eroded

162E3 Downs silty clay loam, 14 to 18 percent slopes, severely eroded
163B Fayette silt loam, 2 to 5 percent slopes
163C Fayette silt loam, 5 to 9 percent slopes
163C2 Fayette silt loam, 5 to 9 percent slopes, moderately eroded
163D Fayette silt loam, 9 to 14 percent slopes
163D2 Fayette silt loam, 9 to 14 percent slopes, moderately eroded
163D3 Fayette silty clay loam, 9 to 14 percent slopes, severely eroded
163E Fayette silt loam, 14 to 18 percent slopes
163E2 Fayette silt loam, 14 to 18 percent slopes, moderately eroded
163E3 Fayette silty clay loam, 14 to 18 percent slopes, severely eroded
163F Fayette silt loam, 18 to 25 percent slopes
163F2 Fayette silt loam, 18 to 25 percent slopes, moderately eroded
163F3 Fayette silty clay loam, 18 to 25 percent slopes, severely eroded
163G Fayette silt loam, 25 to 40 percent slopes
165 Stronghurst silt loam, 0 to 2 percent slopes
171C2 Bassett loam, 5 to 9 percent slopes, moderately eroded
171D2 Bassett loam, 9 to 14 percent slopes, moderately eroded
171D3 Bassett loam, 9 to 14 percent slopes, severely eroded
171E2 Bassett loam, 14 to 18 percent slopes, moderately eroded
171E3 Bassett loam, 14 to 18 percent slopes, severely eroded
172 Wabash silty clay, 0 to 2 percent slopes, occasionally flooded
175 Dickinson fine sandy loam, 0 to 2 percent slopes
175B Dickinson fine sandy loam, 2 to 5 percent slopes
175C Dickinson fine sandy loam, 5 to 9 percent slopes
178 Waukee loam, 0 to 2 percent slopes
178B Waukee loam, 2 to 5 percent slopes
178C Waukee loam, 5 to 9 percent slopes
179D2 Gara loam, 9 to 14 percent slopes, moderately eroded
179D3 Gara clay loam, 9 to 14 percent slopes, severely eroded
179E2 Gara loam, 14 to 18 percent slopes, moderately eroded
179E3 Gara clay loam, 14 to 18 percent slopes, severely eroded
179F2 Gara loam, 18 to 25 percent slopes, moderately eroded
179F3 Gara clay loam, 18 to 25 percent slopes, severely eroded
180 Keomah silt loam, 0 to 2 percent slopes
192D2 Adair silty clay loam, 9 to 14 percent slopes, moderately eroded
192D3 Adair clay loam, 9 to 14 percent slopes, severely eroded
220 Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded
279 Taintor silty clay loam, 0 to 2 percent slopes
280 Mahaska silty clay loam, 0 to 2 percent slopes
281B Otley silty clay loam, 2 to 5 percent slopes
281C Otley silty clay loam, 5 to 9 percent slopes
281C2 Otley silty clay loam, 5 to 9 percent slopes, moderately eroded
281D2 Otley silty clay loam, 9 to 14 percent slopes, moderately eroded
281D3 Otley silty clay loam, 9 to 14 percent slopes, severely eroded
281E2 Otley silty clay loam, 14 to 18 percent slopes, moderately eroded
291 Atterberry silt loam, 0 to 2 percent slopes
293C Fayette-Chelsea-Tell complex, 5 to 9 percent slopes
293D Fayette-Chelsea-Tell complex, 9 to 14 percent slopes
293D2 Fayette-Chelsea-Tell complex, 9 to 14 percent slopes, moderately eroded
293E Fayette-Chelsea-Tell complex, 14 to 18 percent slopes
293E2 Fayette-Chelsea-Tell complex, 14 to 18 percent slopes, moderately eroded
293G Fayette-Chelsea-Tell complex, 18 to 40 percent slopes
353B Tell silt loam, 2 to 5 percent slopes
353C Tell silt loam, 5 to 9 percent slopes
353C2 Tell silt loam, 5 to 9 percent slopes, moderately eroded
353D2 Tell silt loam, 9 to 14 percent slopes, moderately eroded
377B Dinsdale silty clay loam, 2 to 5 percent slopes
377C Dinsdale silty clay loam, 5 to 9 percent slopes
420 Tama silty clay loam, terrace, 0 to 2 percent slopes
420B Tama silty clay loam, terrace, 2 to 5 percent slopes
422 Amana silt loam, 0 to 2 percent slopes, occasionally flooded
424D2 Lindley-Keswick complex, 9 to 14 percent slopes, moderately eroded
424E2 Lindley-Keswick complex, 14 to 18 percent slopes, moderately eroded
424E3 Lindley-Keswick complex, 14 to 18 percent slopes, severely eroded
424F2 Lindley-Keswick complex, 18 to 25 percent slopes, moderately eroded
425D2 Keswick silty clay loam, 9 to 14 percent slopes, moderately eroded
425D3 Keswick clay loam, 9 to 14 percent slopes, severely eroded
428B Ely silty clay loam, 2 to 5 percent slopes
430 Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded
450 Pillot silt loam, 0 to 2 percent slopes

450B Pillot silt loam, 2 to 5 percent slopes
450C Pillot silt loam, 5 to 9 percent slopes
453 Tuskeego silt loam, 0 to 2 percent slopes, rarely flooded
462B Downs silt loam, terrace, 2 to 5 percent slopes
463B Fayette silt loam, terrace, 2 to 5 percent slopes
463C2 Fayette silt loam, terrace, 5 to 9 percent slopes, moderately eroded
463D2 Fayette silt loam, terrace, 9 to 14 percent slopes, moderately eroded
463D3 Fayette silty clay loam, terrace, 9 to 14 percent slopes, severely eroded
463E2 Fayette silt loam, terrace, 14 to 18 percent slopes, moderately eroded
463E3 Fayette silty clay loam, terrace, 14 to 18 percent slopes, severely eroded
463F2 Fayette silt loam, terrace, 18 to 25 percent slopes, moderately eroded
463F3 Fayette silty clay loam, terrace, 18 to 25 percent slopes, severely eroded
484 Lawson silt loam, 0 to 2 percent slopes, occasionally flooded
587 Chequest silty clay loam, 0 to 2 percent slopes, occasionally flooded
587+ Chequest silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
626 Hayfield silt loam, 0 to 2 percent slopes
663D2 Seaton silt loam, 9 to 14 percent slopes, moderately eroded
663E2 Seaton silt loam, 14 to 18 percent slopes, moderately eroded
663E3 Seaton silt loam, 14 to 18 percent slopes, severely eroded
663F2 Seaton silt loam, 18 to 25 percent slopes, moderately eroded
687 Watkins silt loam, 0 to 2 percent slopes, rarely flooded
687B Watkins silt loam, 2 to 5 percent slopes, rarely flooded
688 Koszta silt loam, 0 to 2 percent slopes, rarely flooded
771B Waubeek silt loam, 2 to 5 percent slopes
771C2 Waubeek silt loam, 5 to 9 percent slopes, moderately eroded
792D2 Armstrong silty clay loam, 9 to 14 percent slopes, moderately eroded
876B Ladoga silt loam, terrace, 2 to 5 percent slopes
876C Ladoga silt loam, terrace, 5 to 9 percent slopes
876C2 Ladoga silt loam, terrace, 5 to 9 percent slopes, moderately eroded
876D2 Ladoga silt loam, terrace, 9 to 14 percent slopes, moderately eroded
881B Otley silty clay loam, terrace, 2 to 5 percent slopes
911B Colo-Ely complex, 2 to 5 percent slopes
993D2 Gara-Armstrong complex, 9 to 14 percent slopes, moderately eroded
993E2 Gara-Armstrong complex, 14 to 18 percent slopes, moderately eroded
993F2 Gara-Armstrong complex, 18 to 25 percent slopes, moderately eroded
1160 Walford silt loam, terrace, 0 to 2 percent slopes
1220 Nodaway silt loam, 0 to 2 percent slopes, channelled, frequently flooded
1291 Atterberry silt loam, terrace, 0 to 2 percent slopes
1354 Aqunts, ponded
1442B Tama-Sparta-Pillot complex, 2 to 5 percent slopes
1442C Tama-Sparta-Pillot complex, 5 to 9 percent slopes
1442C2 Tama-Sparta-Pillot complex, 5 to 9 percent slopes, moderately eroded
1442D2 Tama-Sparta-Pillot complex, 9 to 14 percent slopes, moderately eroded
1442E2 Tama-Sparta-Pillot complex, 14 to 18 percent slopes, moderately eroded
1540 Quiver-Zook-Klum complex, 0 to 2 percent slopes, frequently flooded
2219 Ella silt loam, 0 to 2 percent slopes, rarely flooded
2219B Ella silt loam, 2 to 5 percent slopes, rarely flooded
2219C2 Ella silt loam, 5 to 9 percent slopes, moderately eroded, rarely flooded
2422 Amana-Nodaway-Lawson complex, 0 to 2 percent slopes, occasionally flooded
4946 Udorthents-Interstate highway complex, 0 to 5 percent slopes
5010 Pits, sand and gravel
5040 Udorthents, loamy
6220 Nodaway silt loam, 0 to 2 percent slopes, frequently flooded
6422 Amana silt loam, 0 to 2 percent slopes, frequently flooded
AW Animal waste lagoon
SL Sewage lagoon
W Water

IOWA COUNTY, IOWA

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

SOIL SURVEY FEATURES

SOIL DELINEATIONS AND LABELS

STANDARD LANDFORM AND MISCELLANEOUS SURFACE FEATURES

Bedrock escarpment	
Non-bedrock escarpment	
Gully	
Levee	
Short steep slope	
Gravel pit	
Gravelly spot	
Marsh or Swamp	
Rock outcrop	
Sandy spot	
Severely eroded spot	
Wet spot	
AD HOC FEATURES	
Disturbed / Reclaimed land	
Clay spot, red	
Wet depression, restricted permeability	
Glacial till spot	

BOUNDARIES

County or parish	
Public Land Survey System Section Boundary	
Airport, airfield	
Cemetery	
County / State park	
Flood pool	
LOCATED OBJECTS	
Small cemetery	
Church	
School	
DAMS	
Medium or Small	

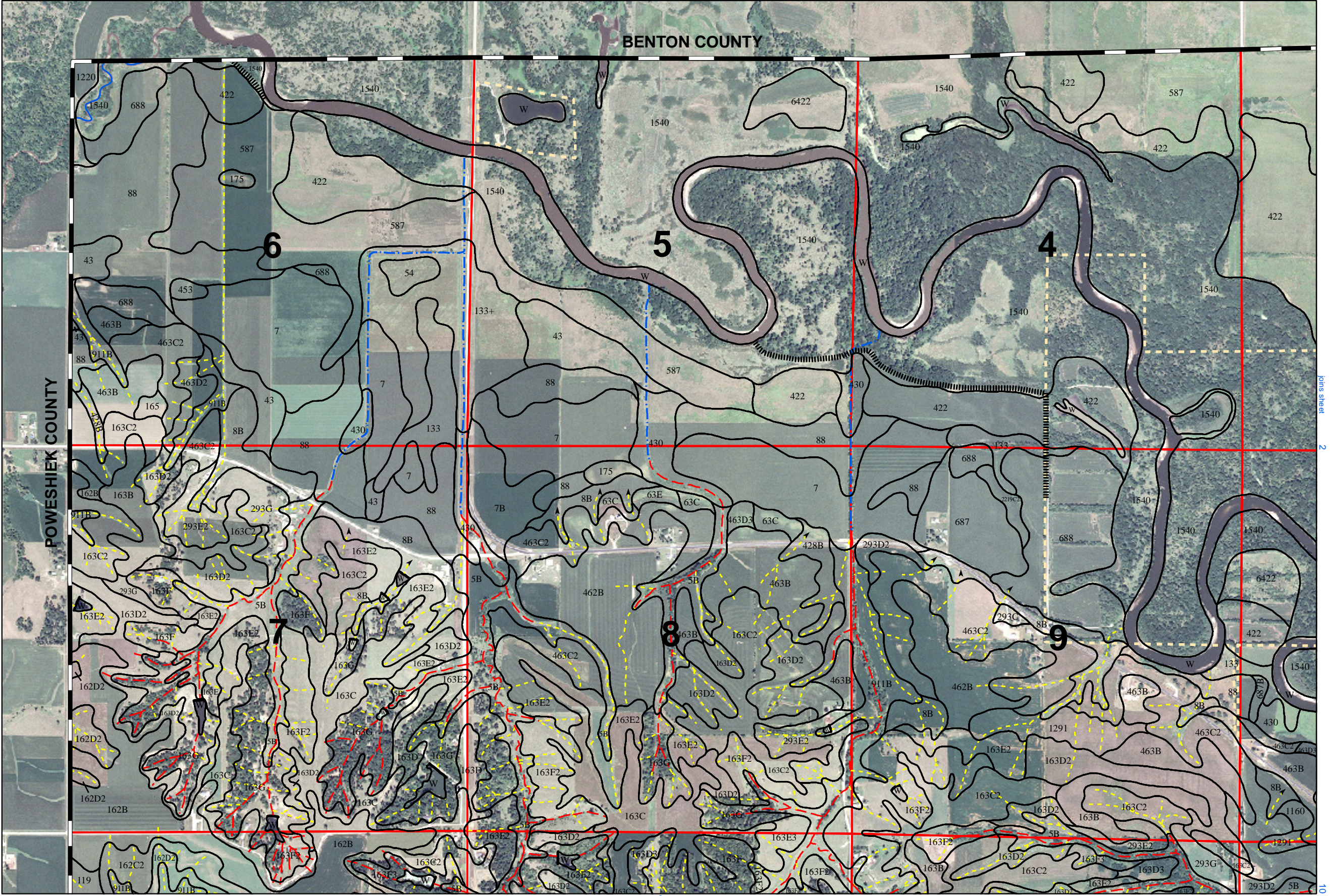
HYDROGRAPHIC FEATURES

DRAINAGE	
Perennial stream	
INTERMITTENT	
Crossable with usual farm equipment	
Not crossable with usual farm equipment	
Drainage end (indicates direction of flow)	
Canals or ditches	
Perennial drainage or irrigation	

Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

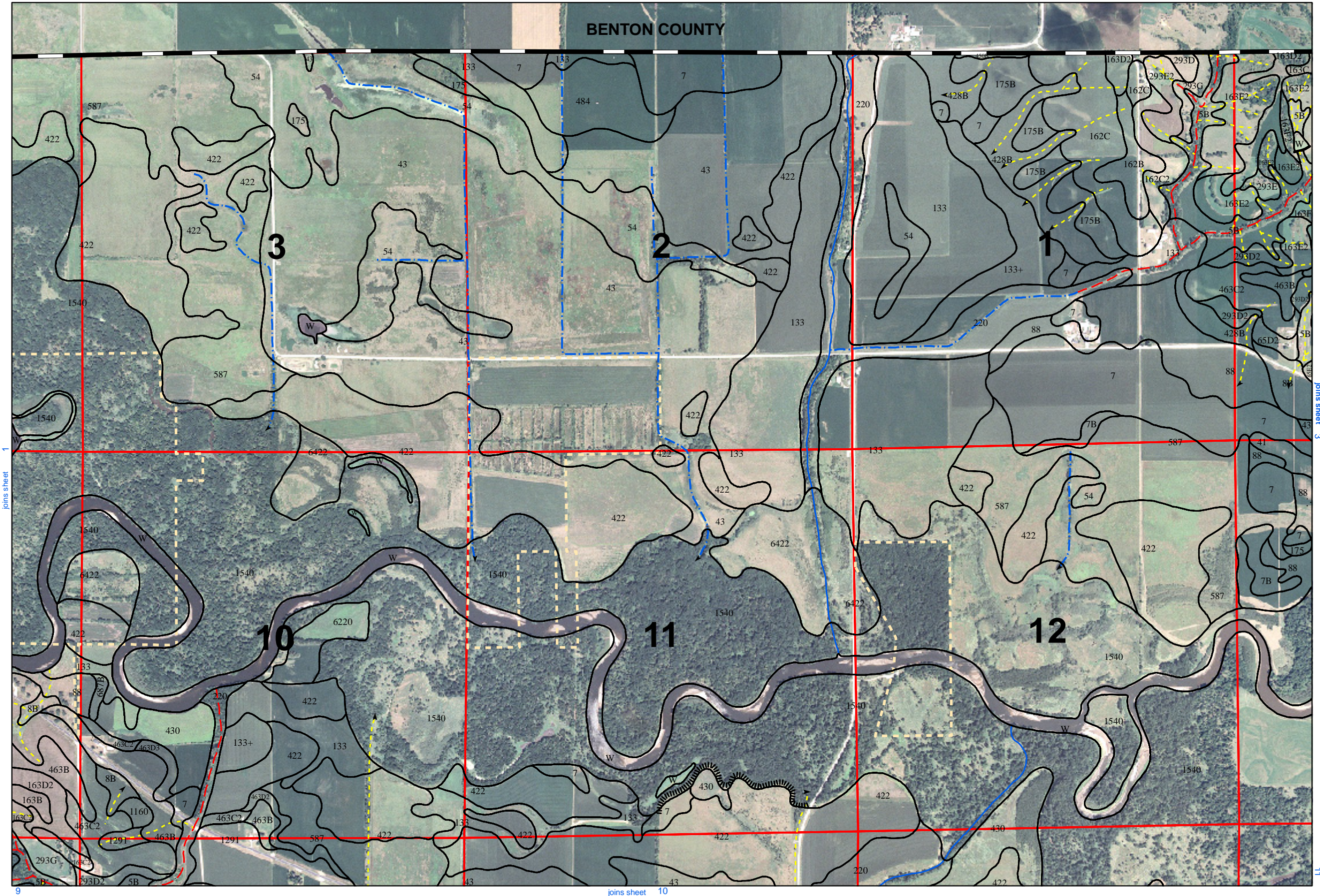


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

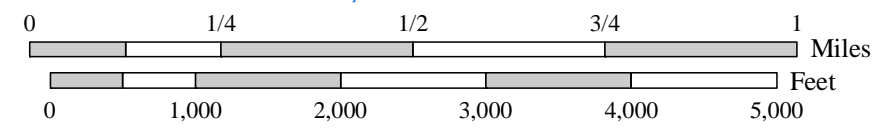
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

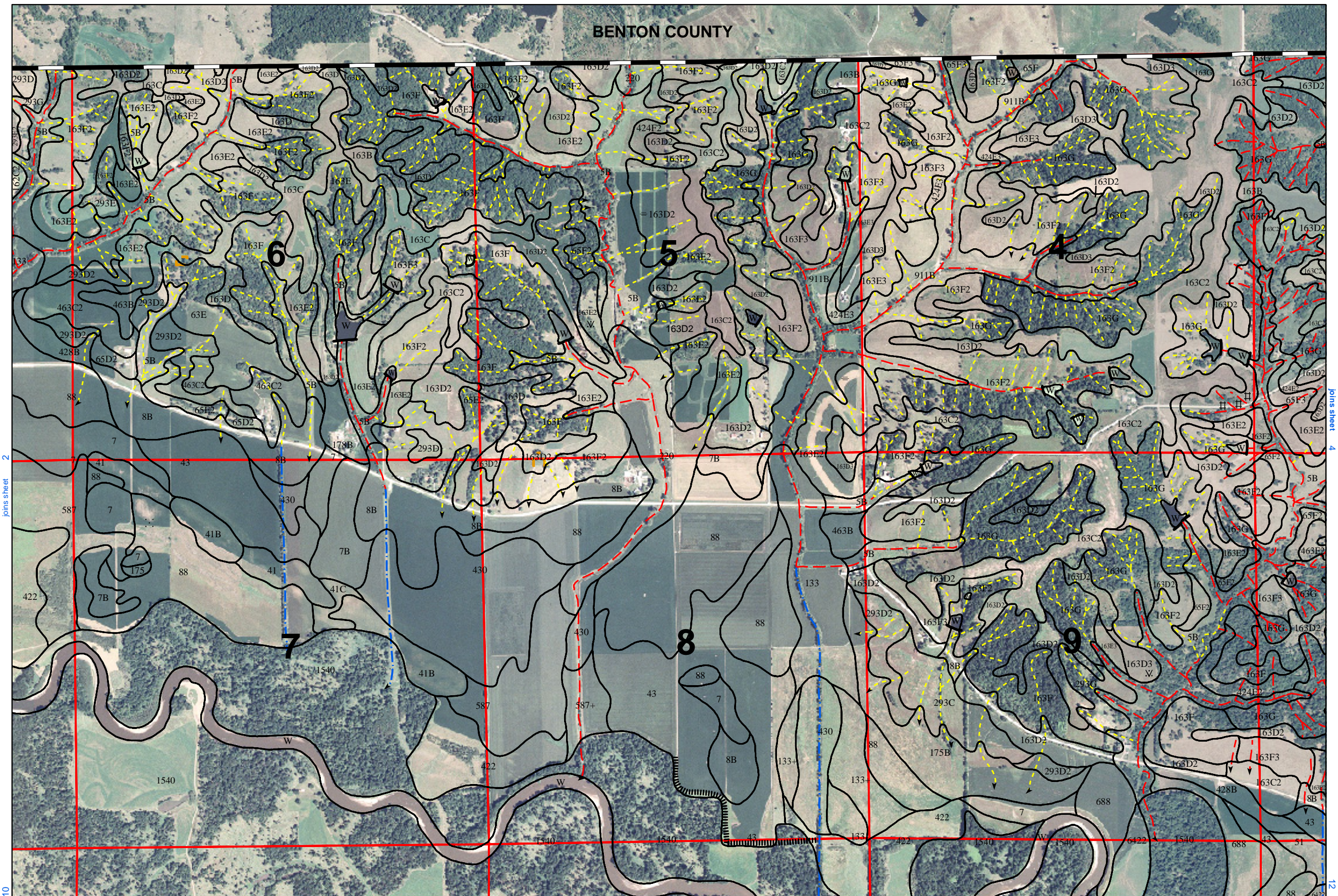


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

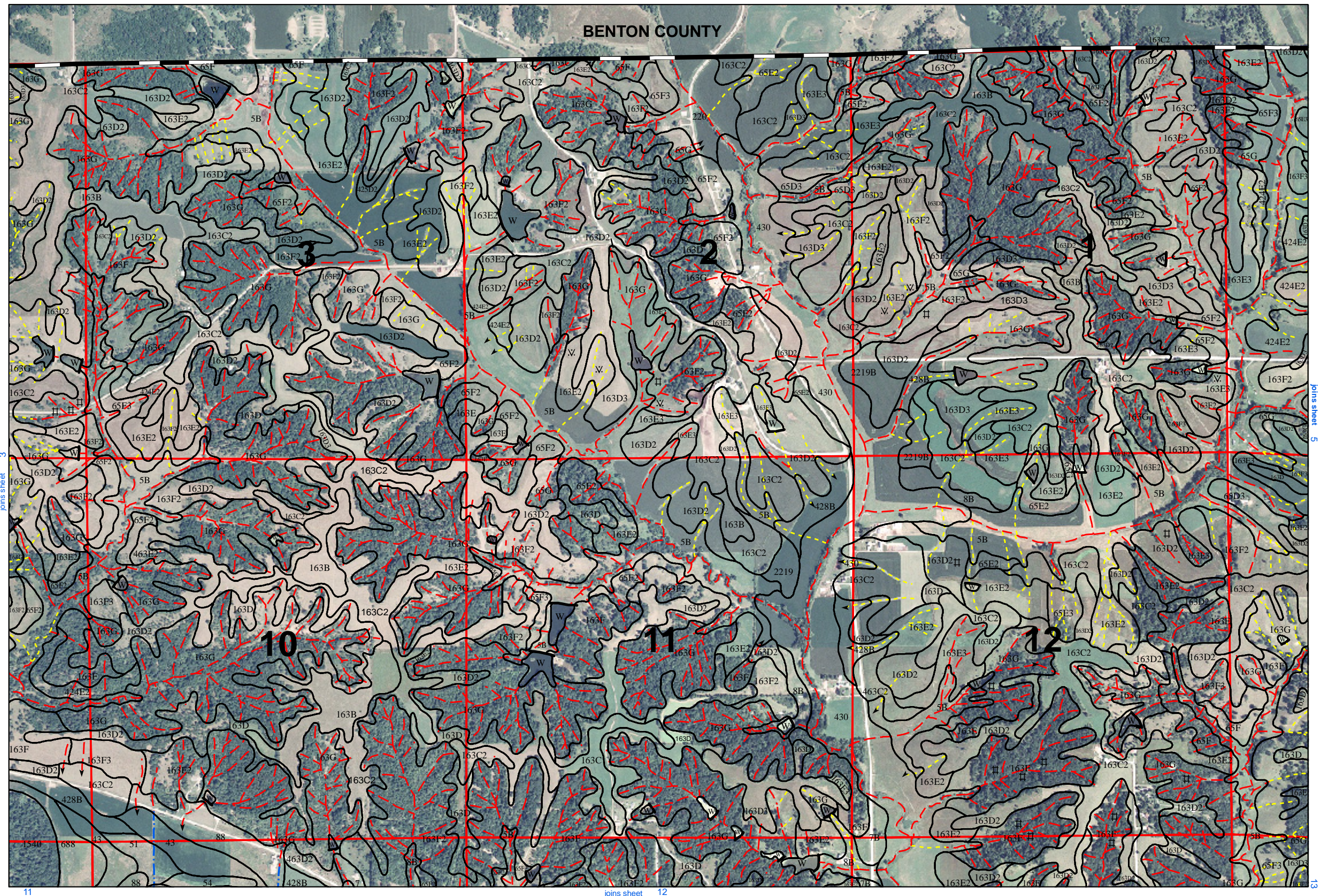


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

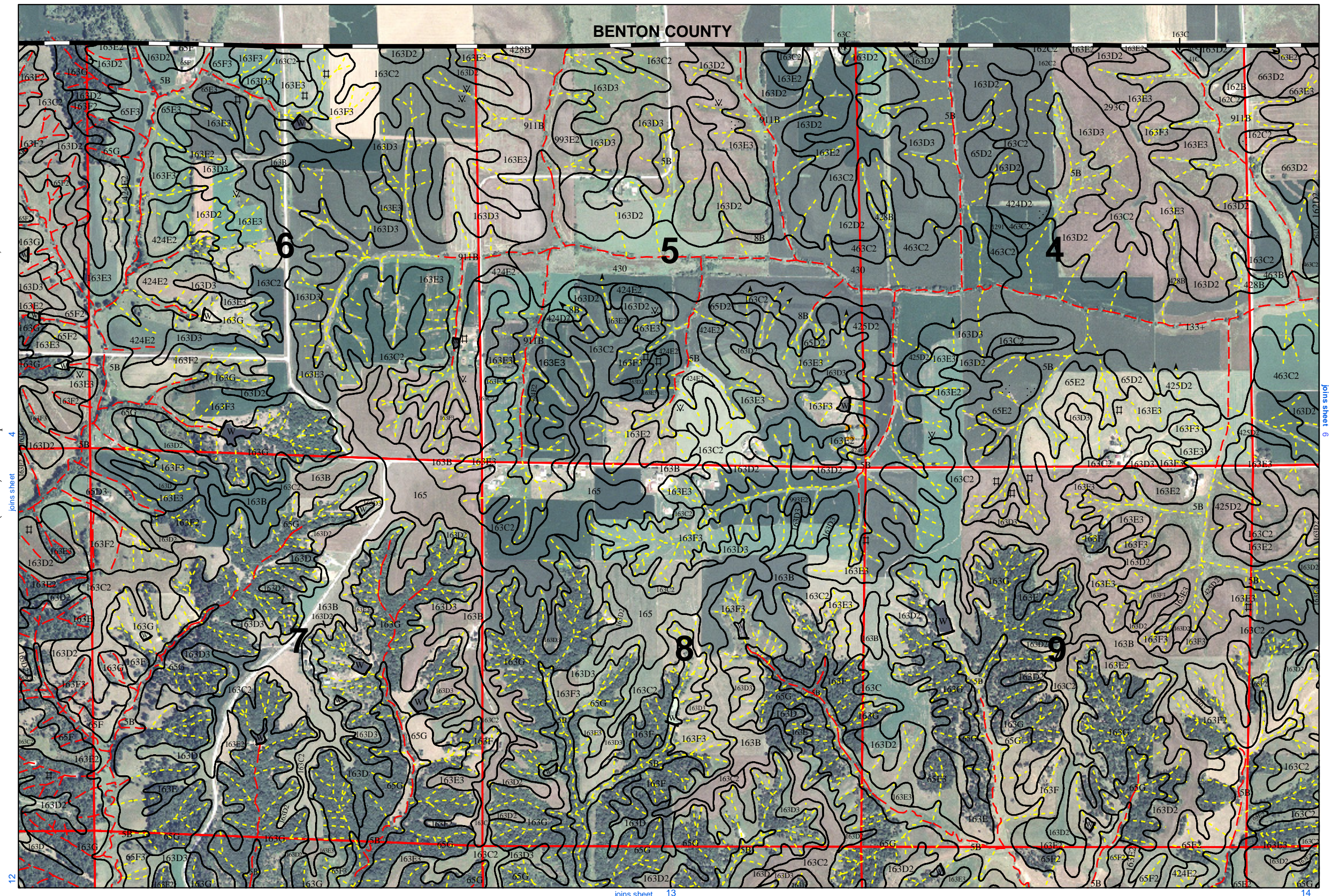


North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

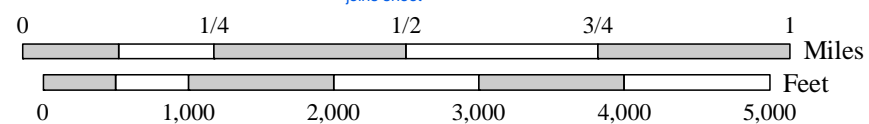


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

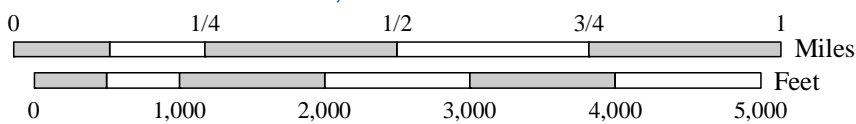


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

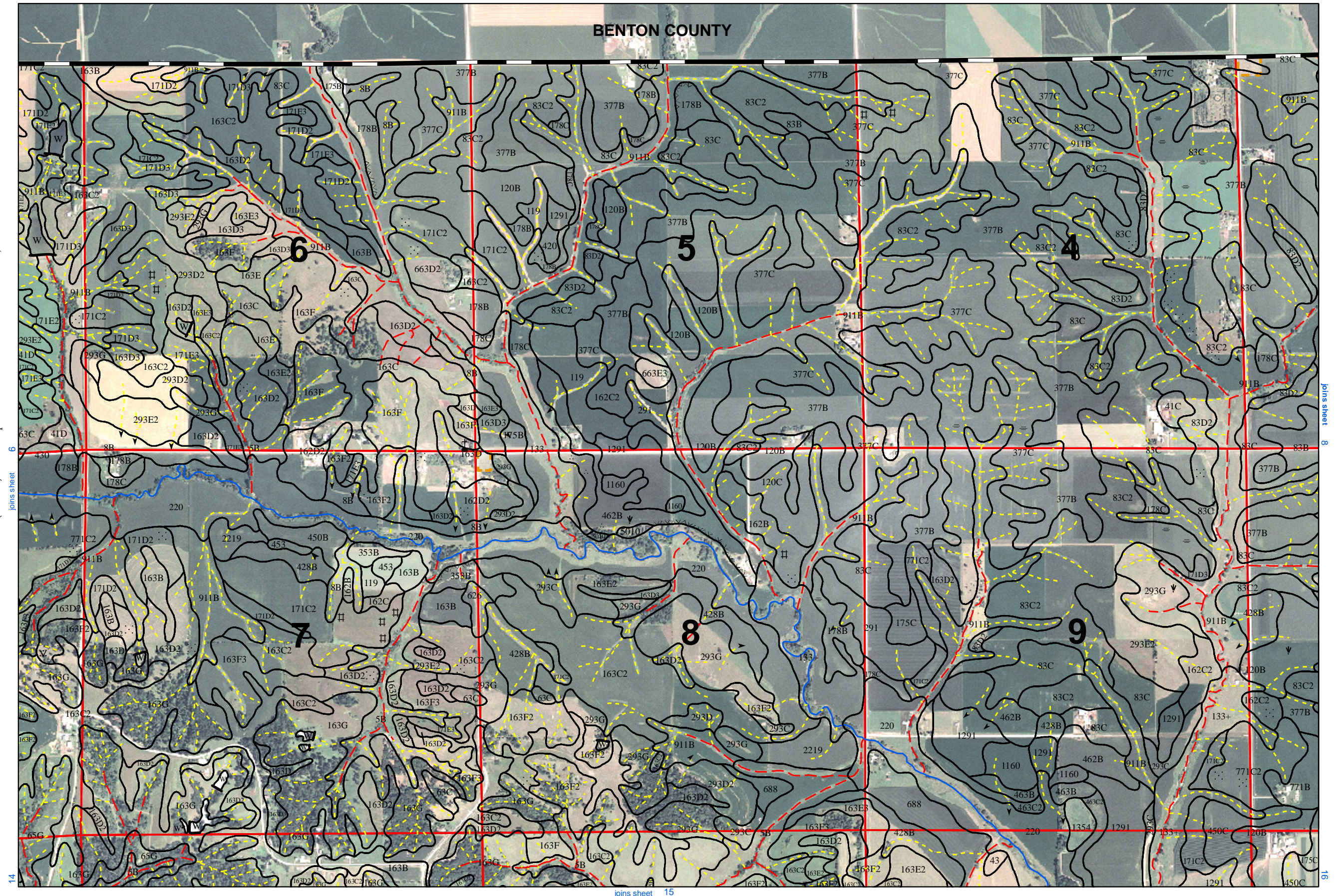


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



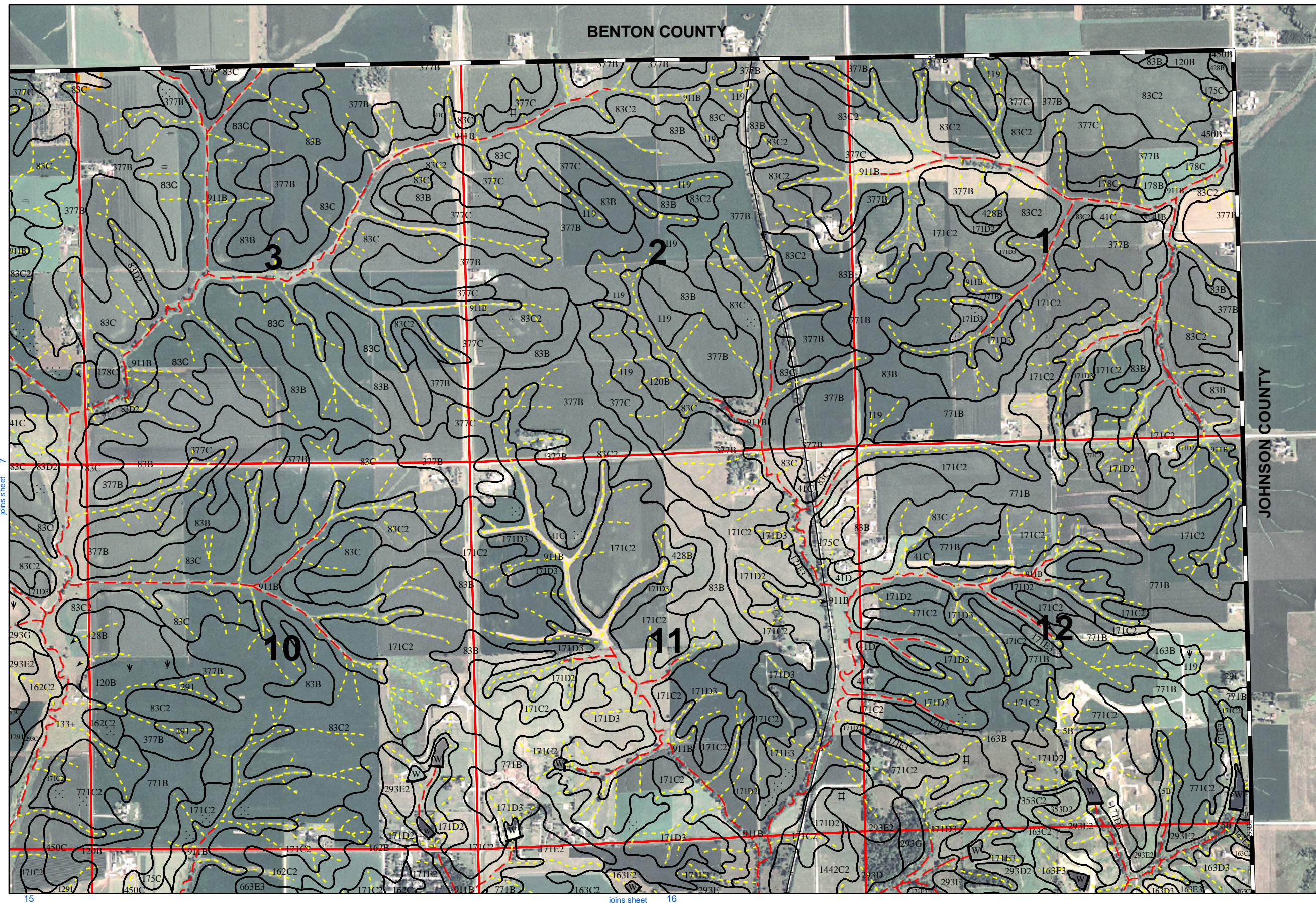
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

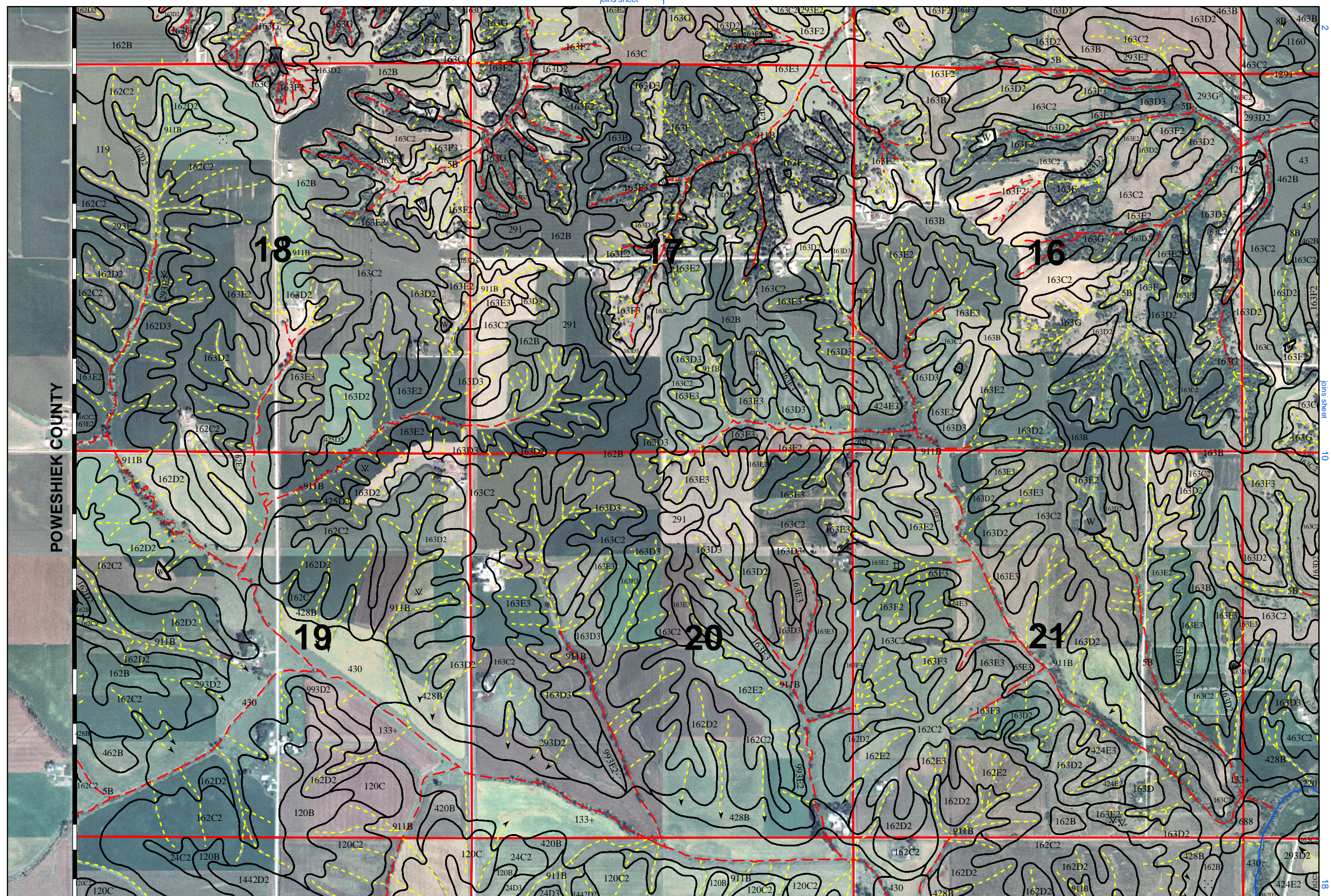
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



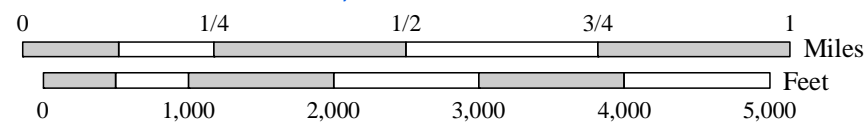
Soil Survey of Iowa County, Iowa

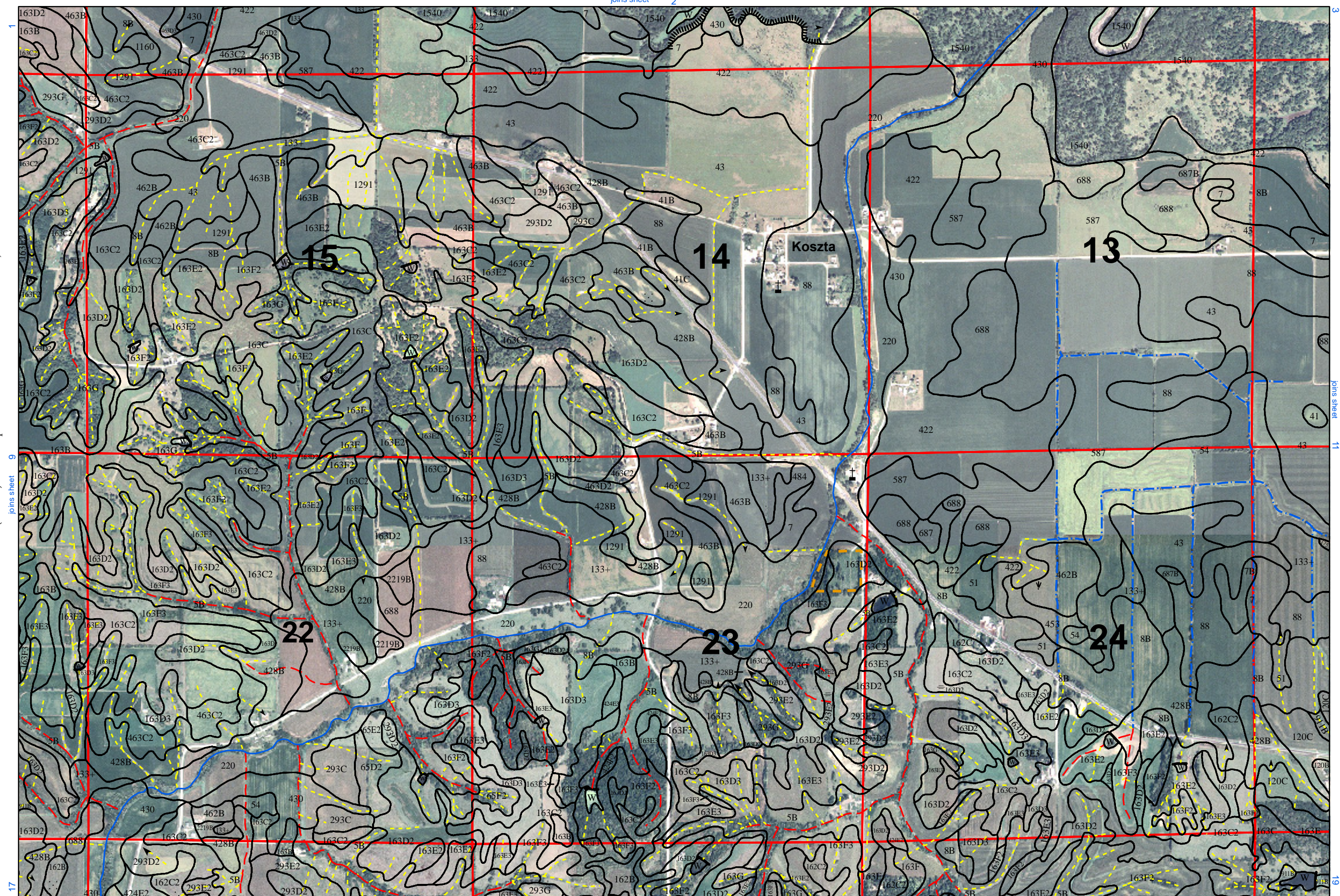
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

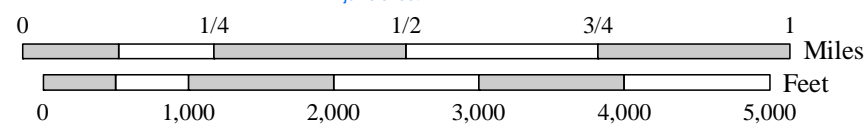


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.





Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



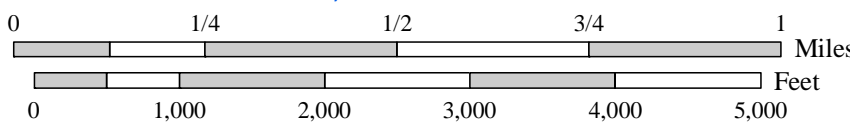
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

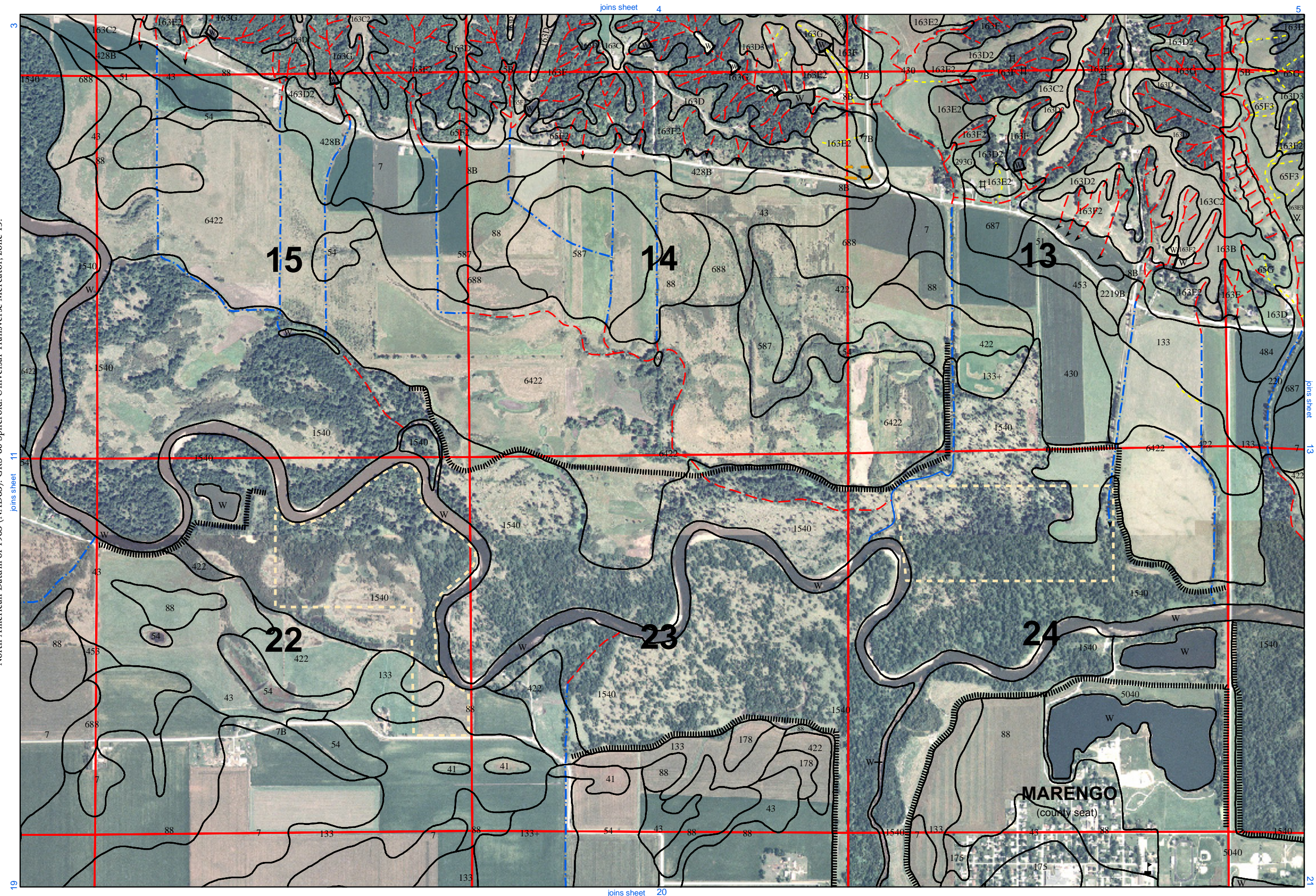


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



Soil Survey of Iowa County, Iowa

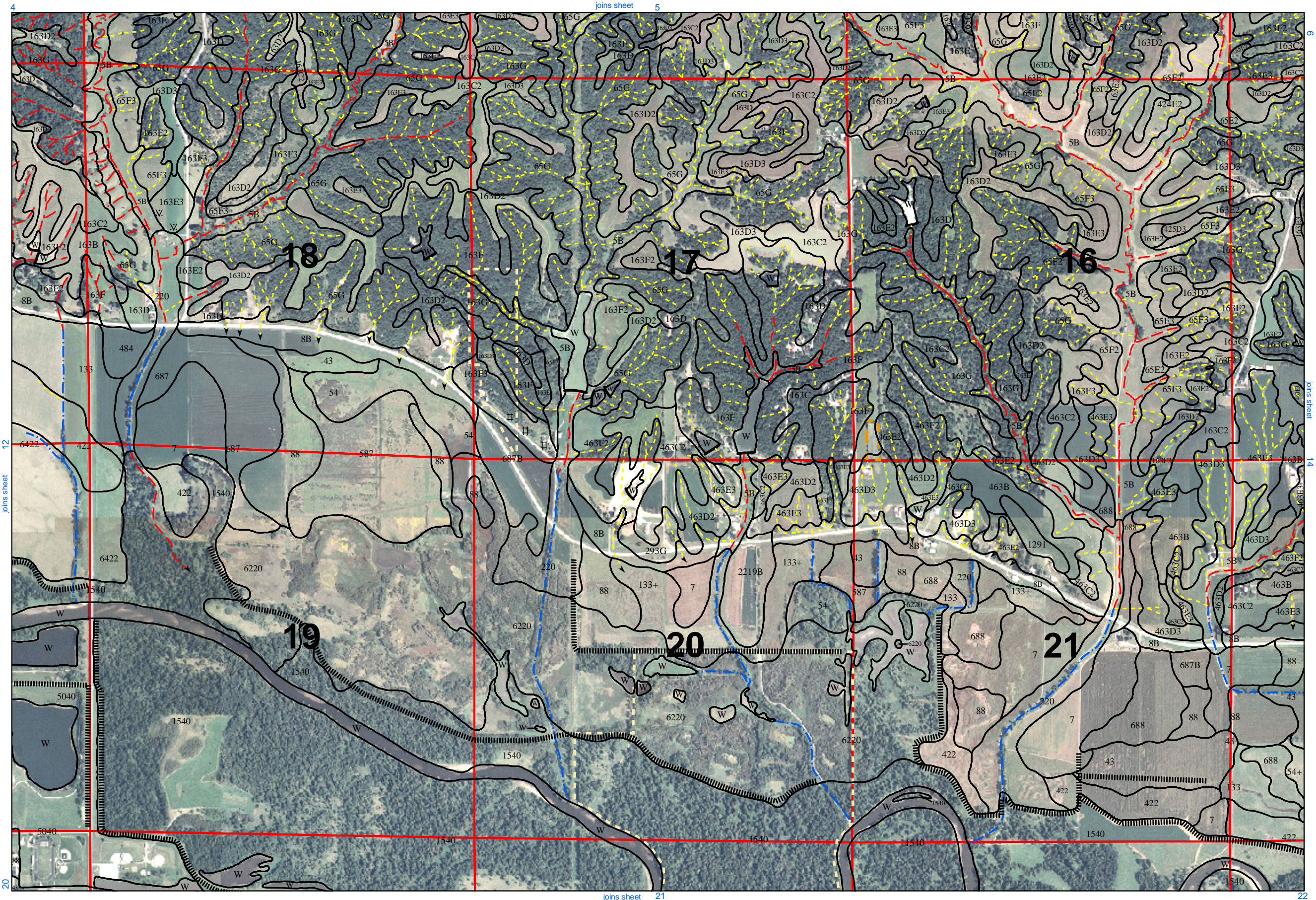
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



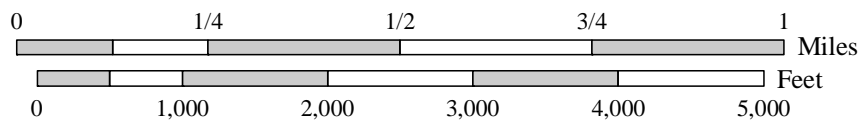
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

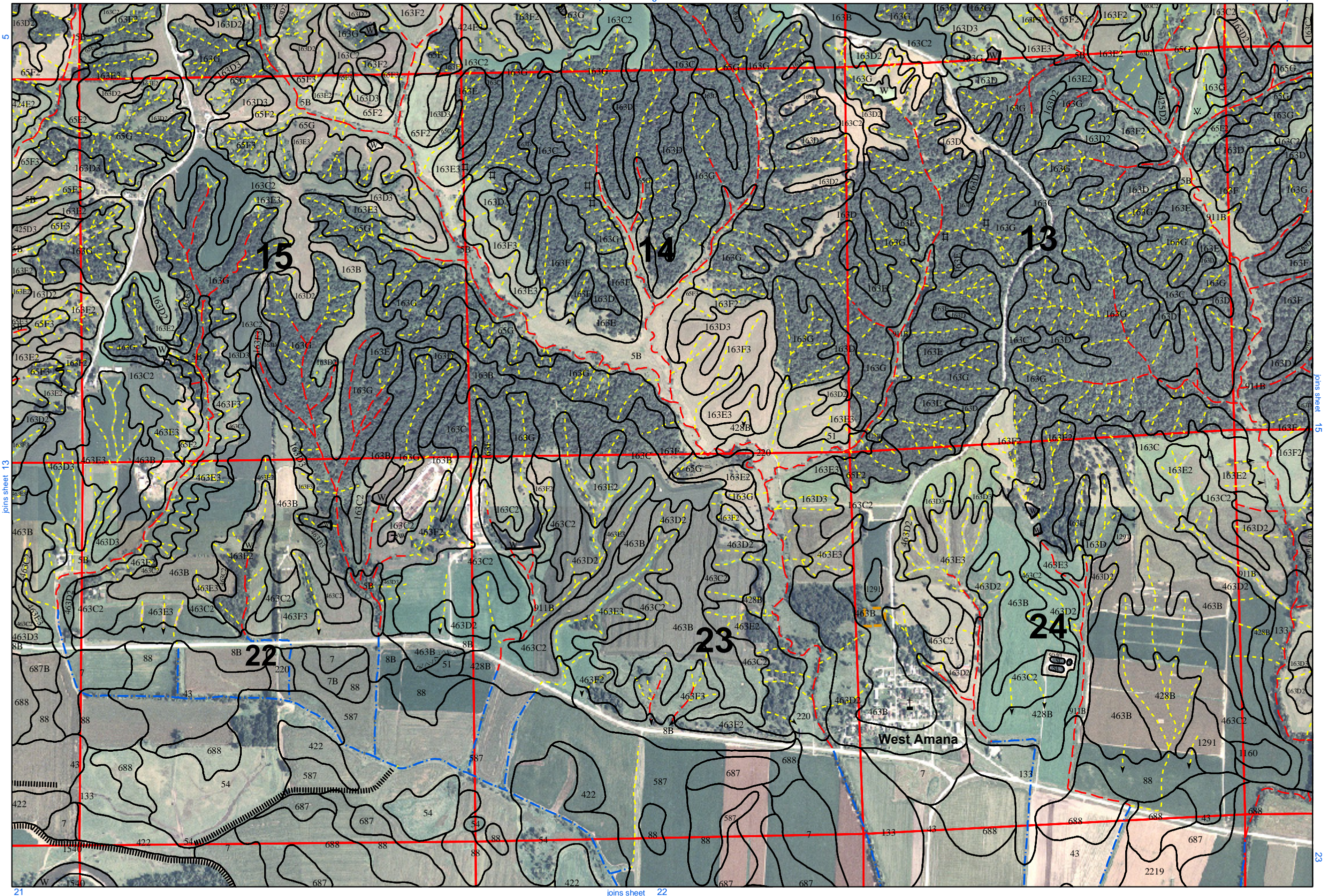


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

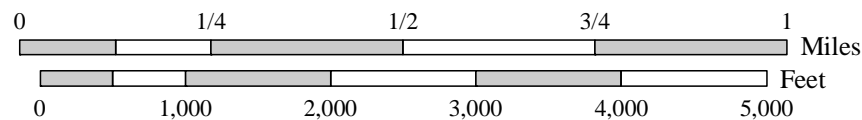


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



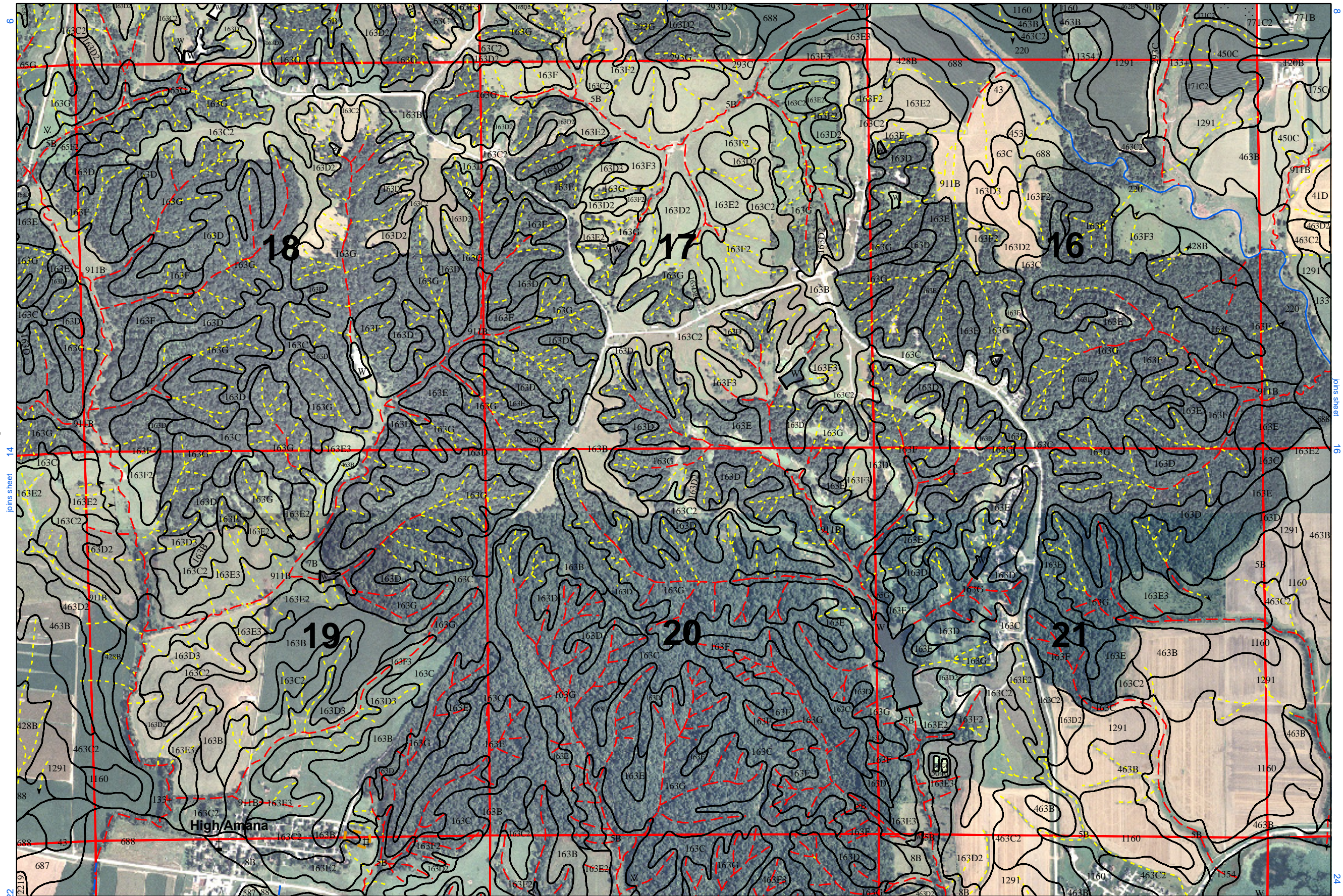
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



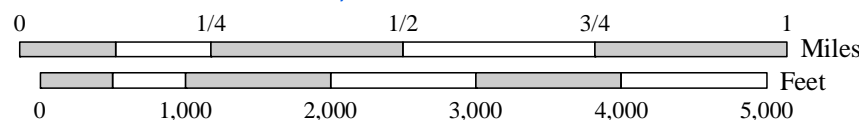
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophoto Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



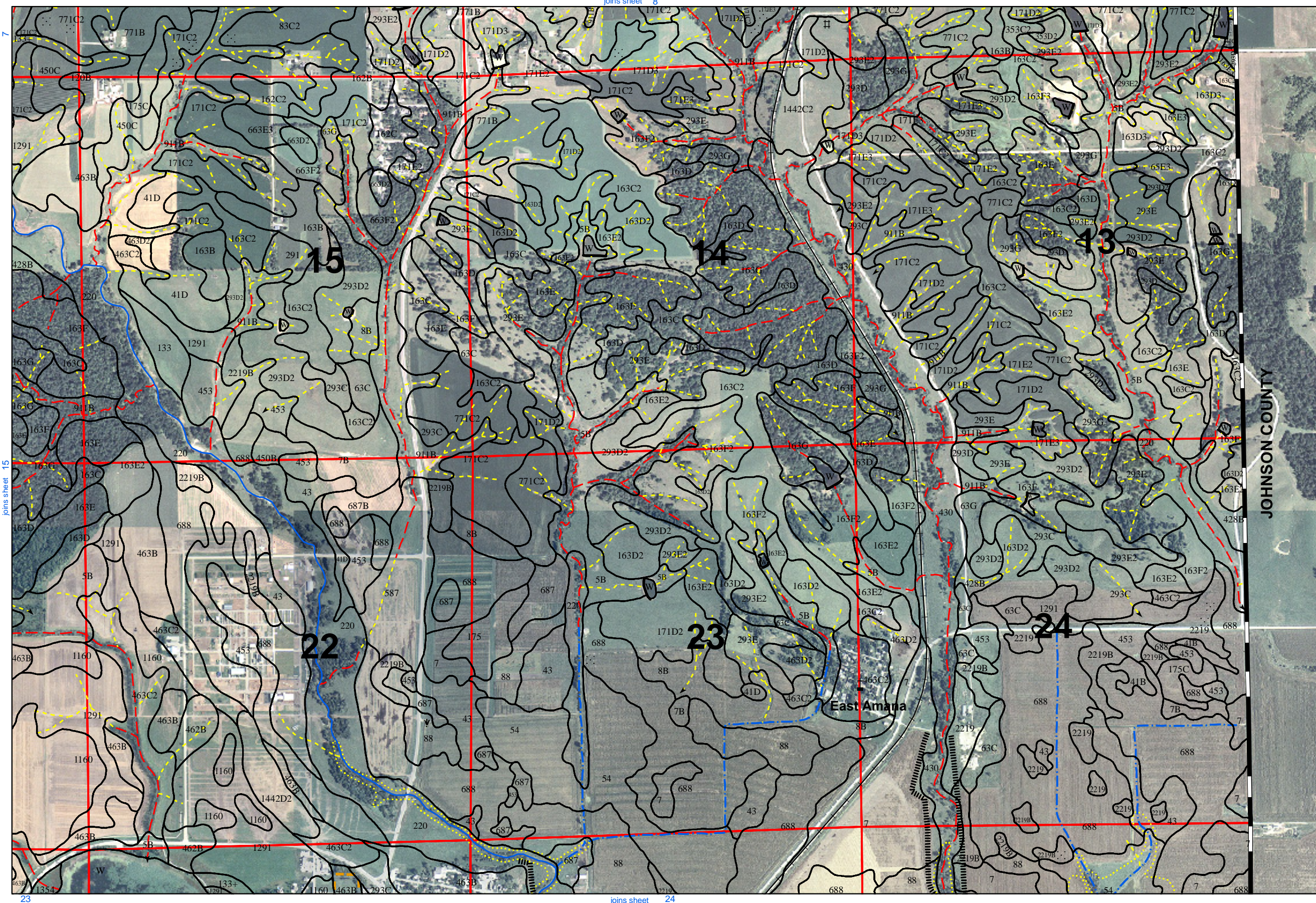
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



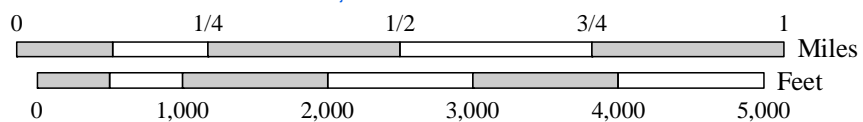
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



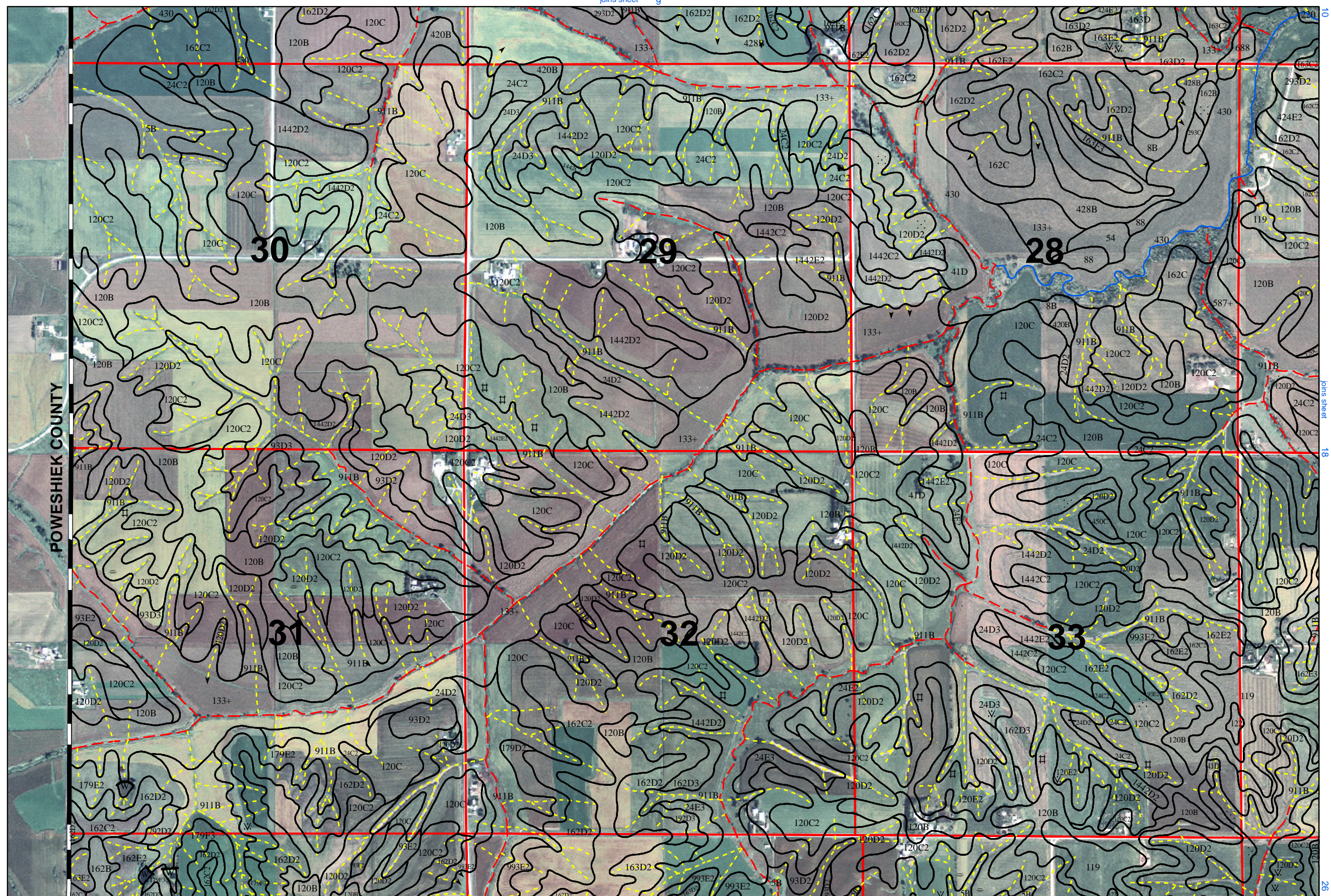
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



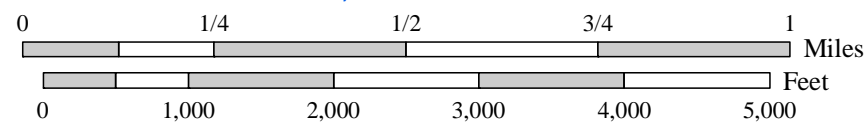
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



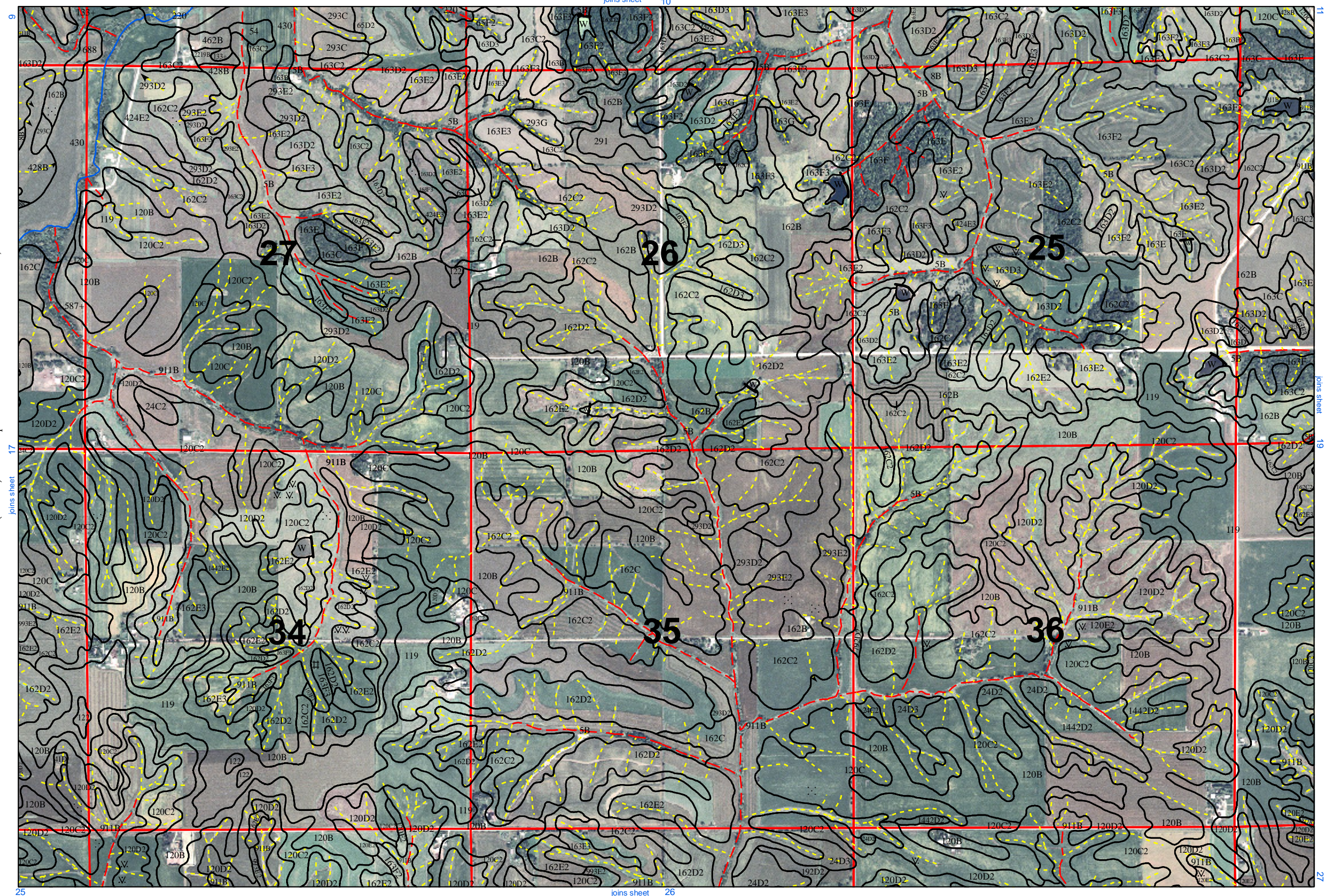
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



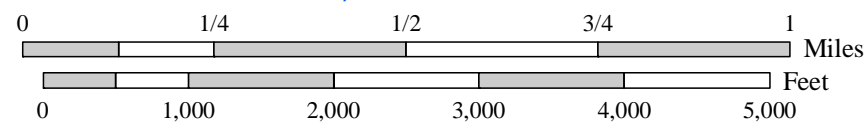
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophoto Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



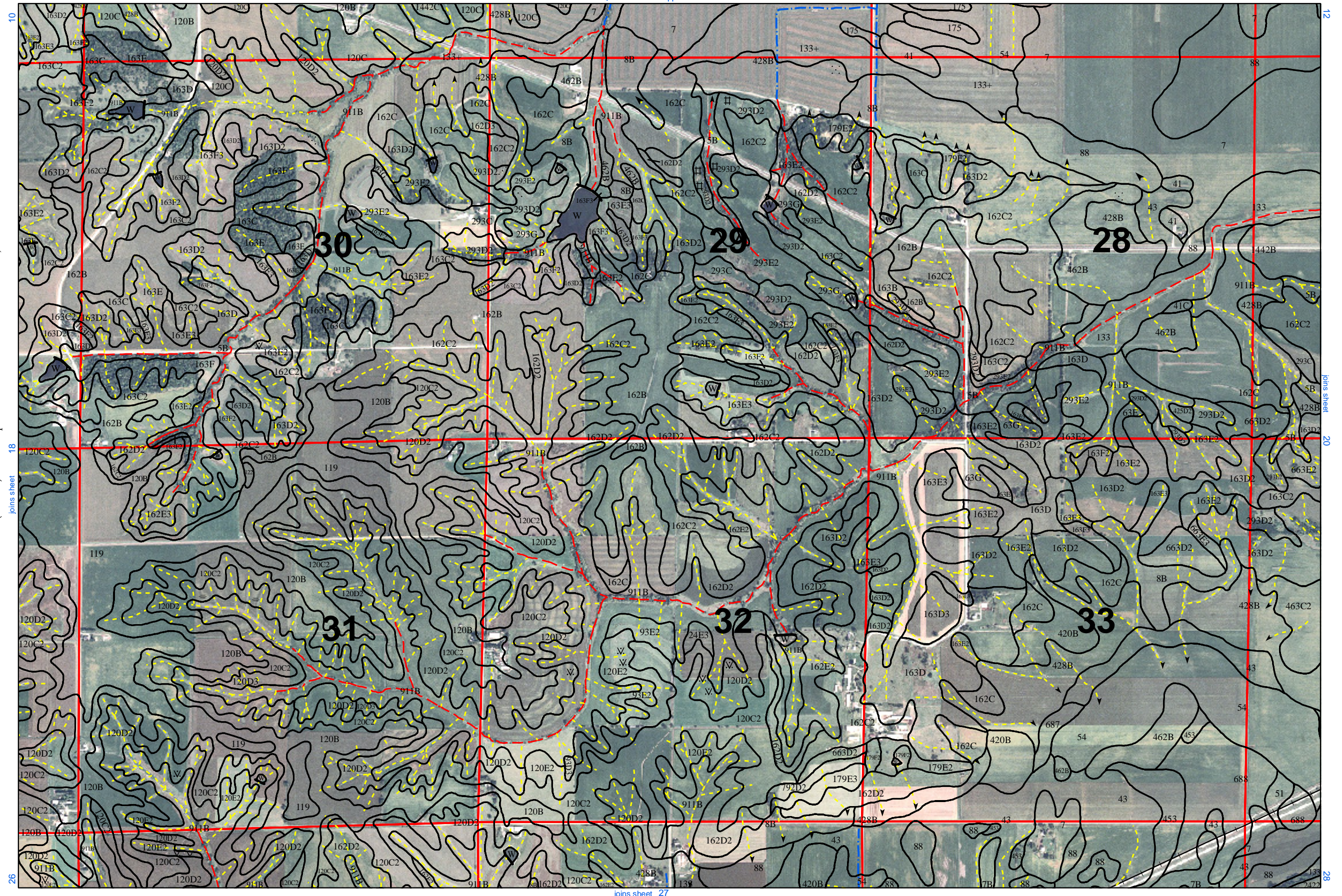
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



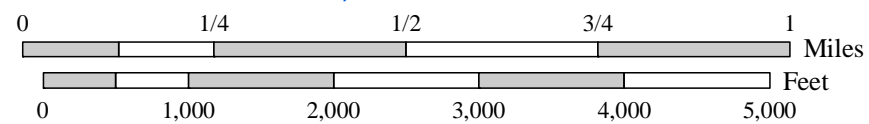
Soil Survey of Iowa County, Iowa

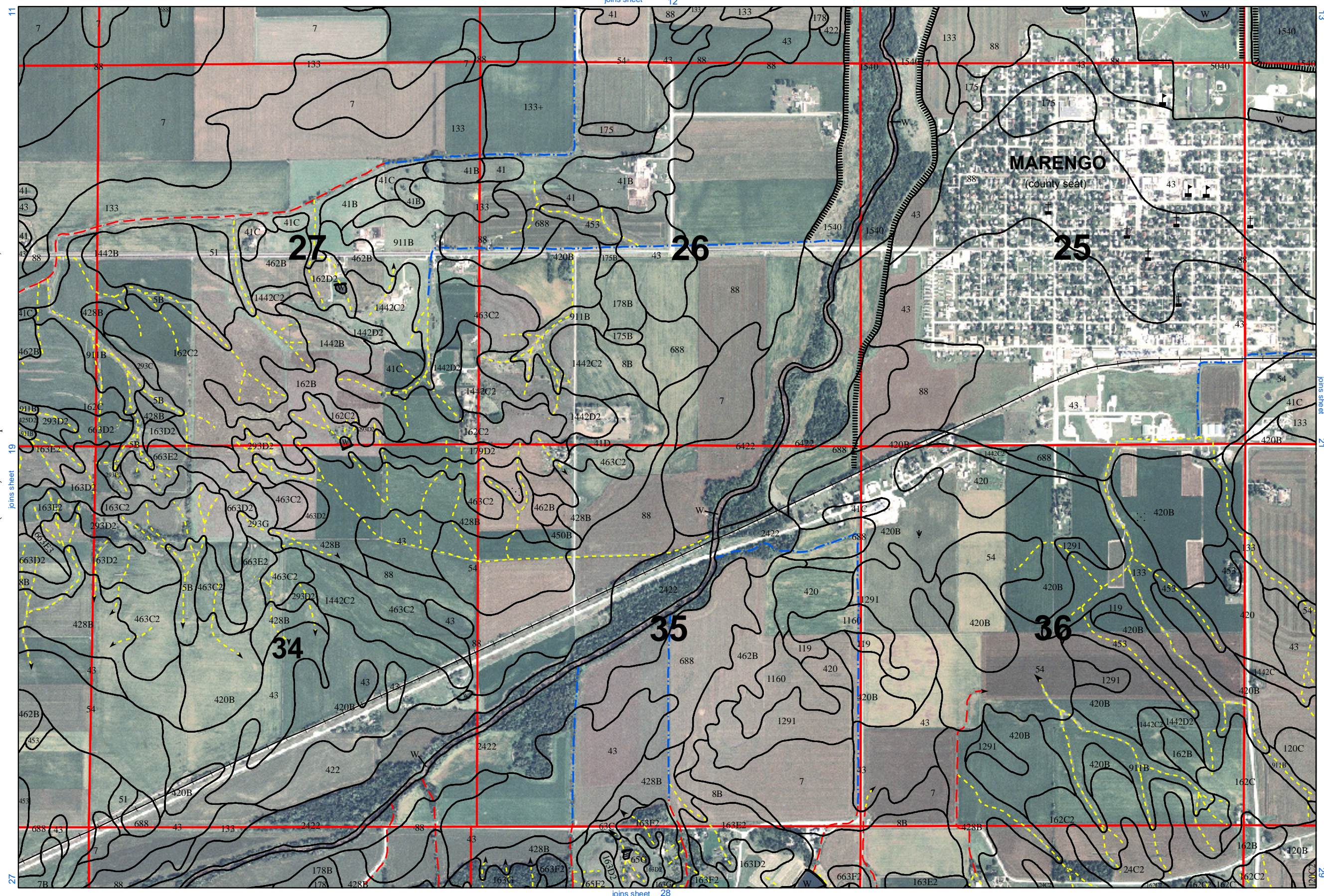
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

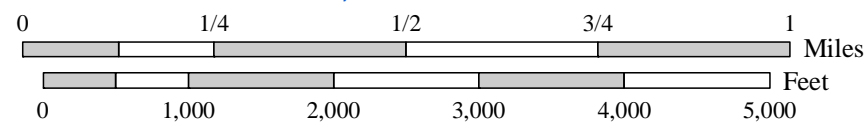


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.





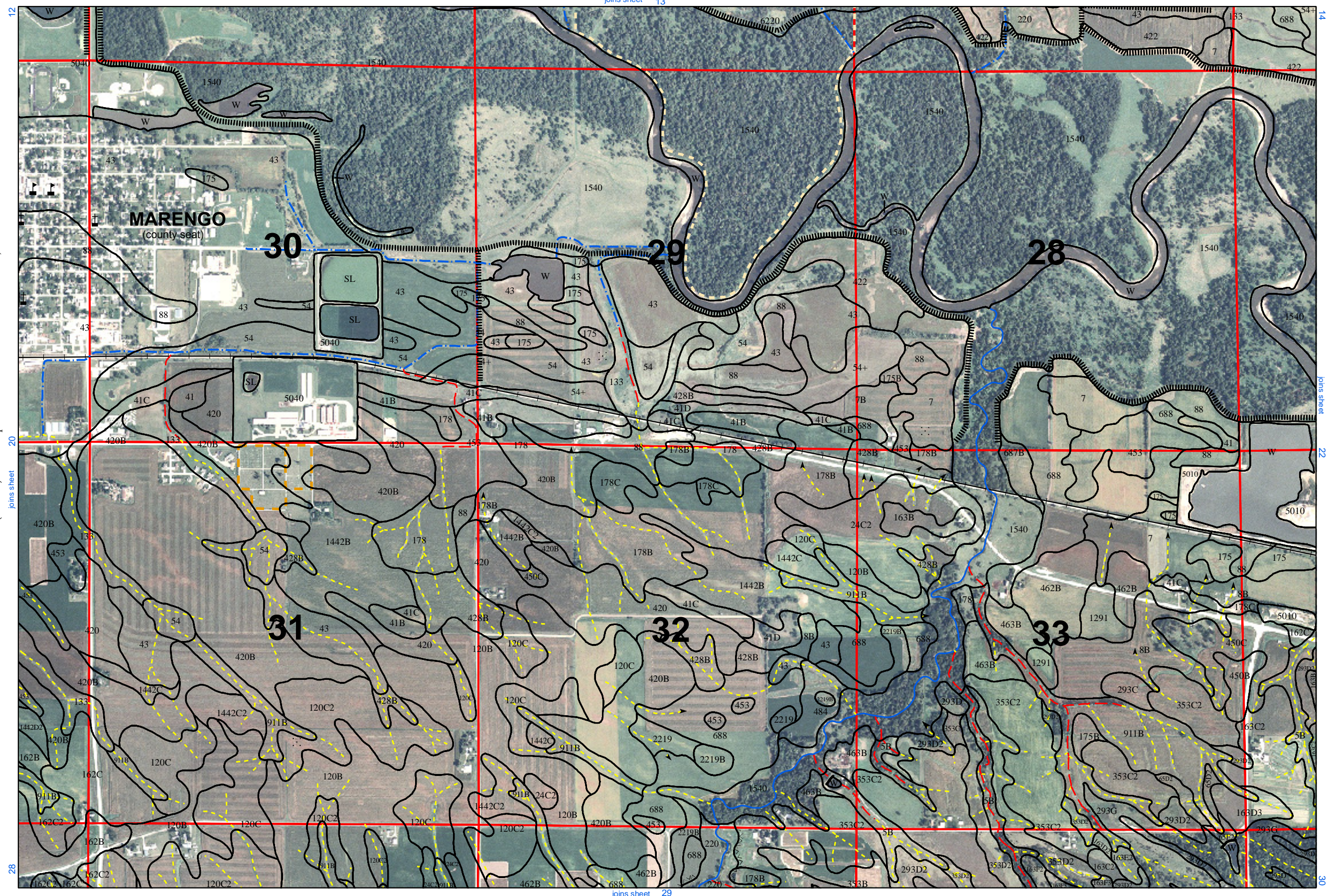
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



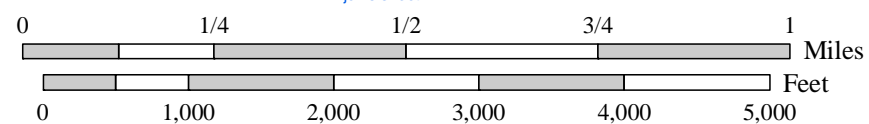
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

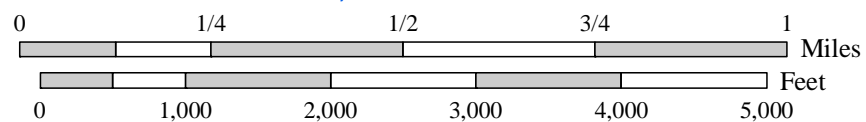
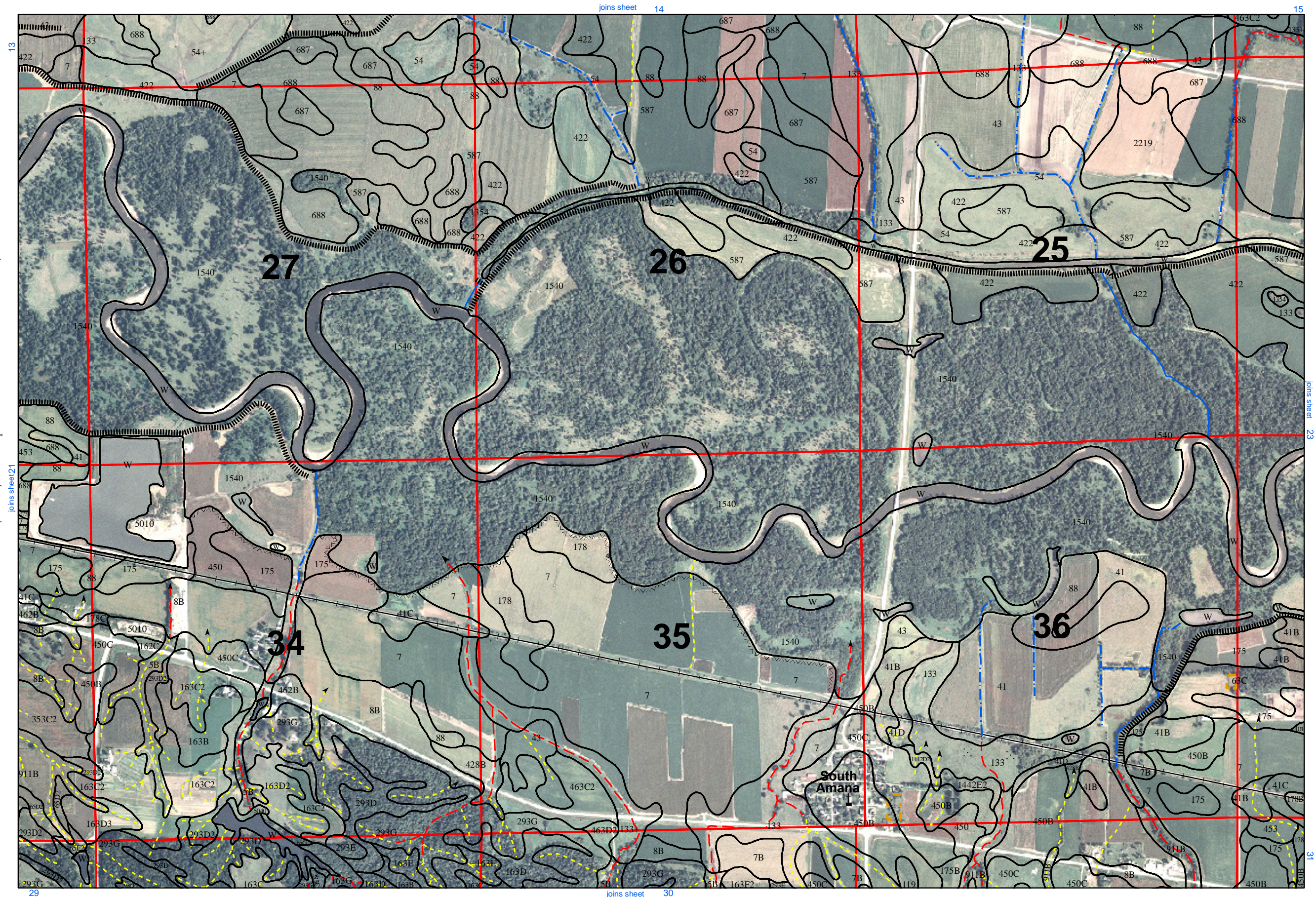


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



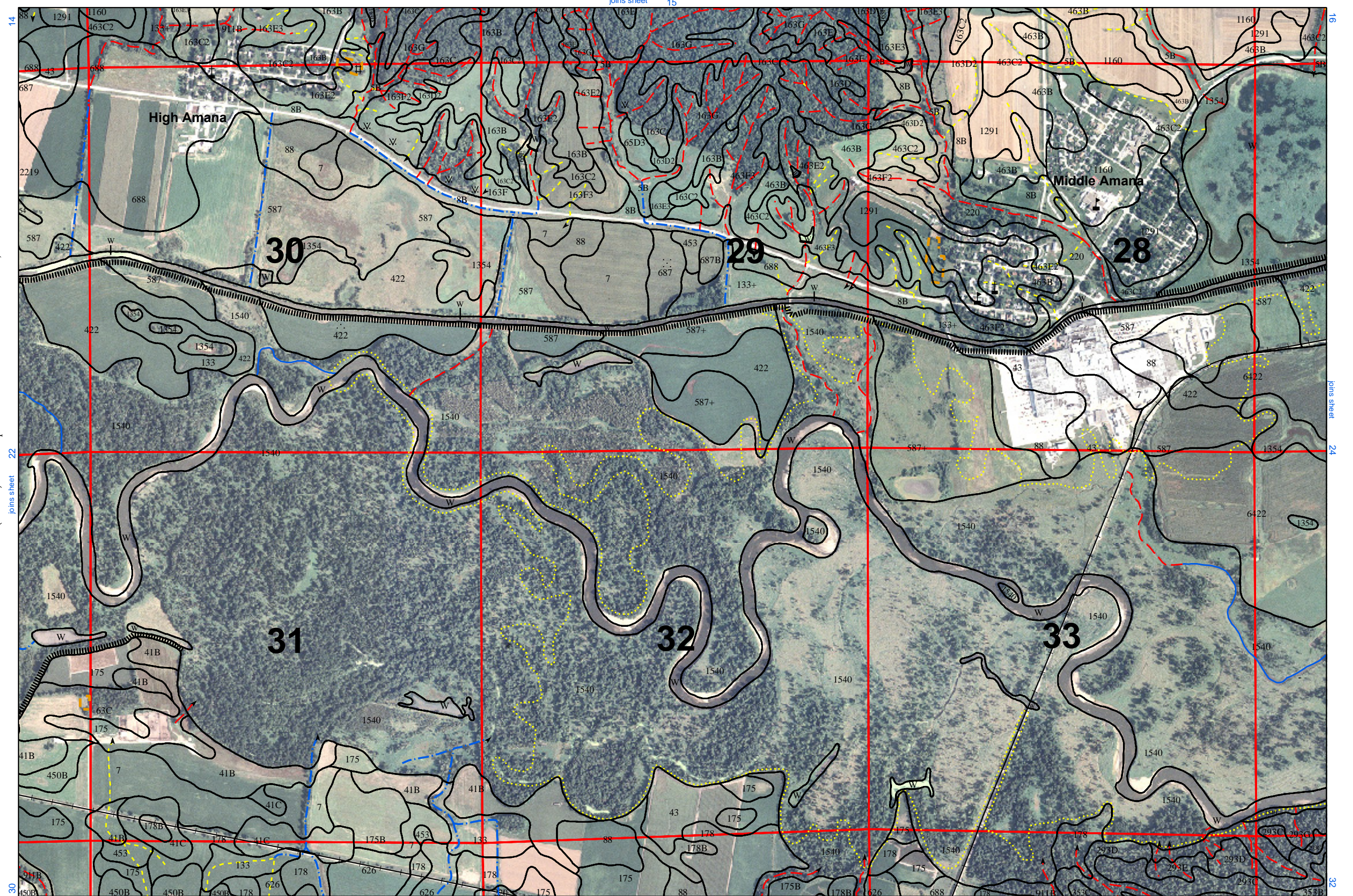
Soil Survey of Iowa County, Iowa

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

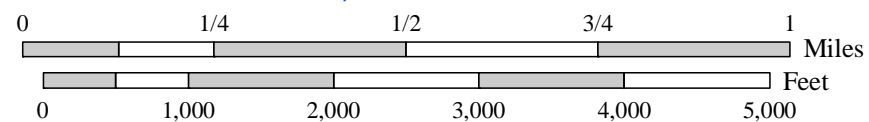


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

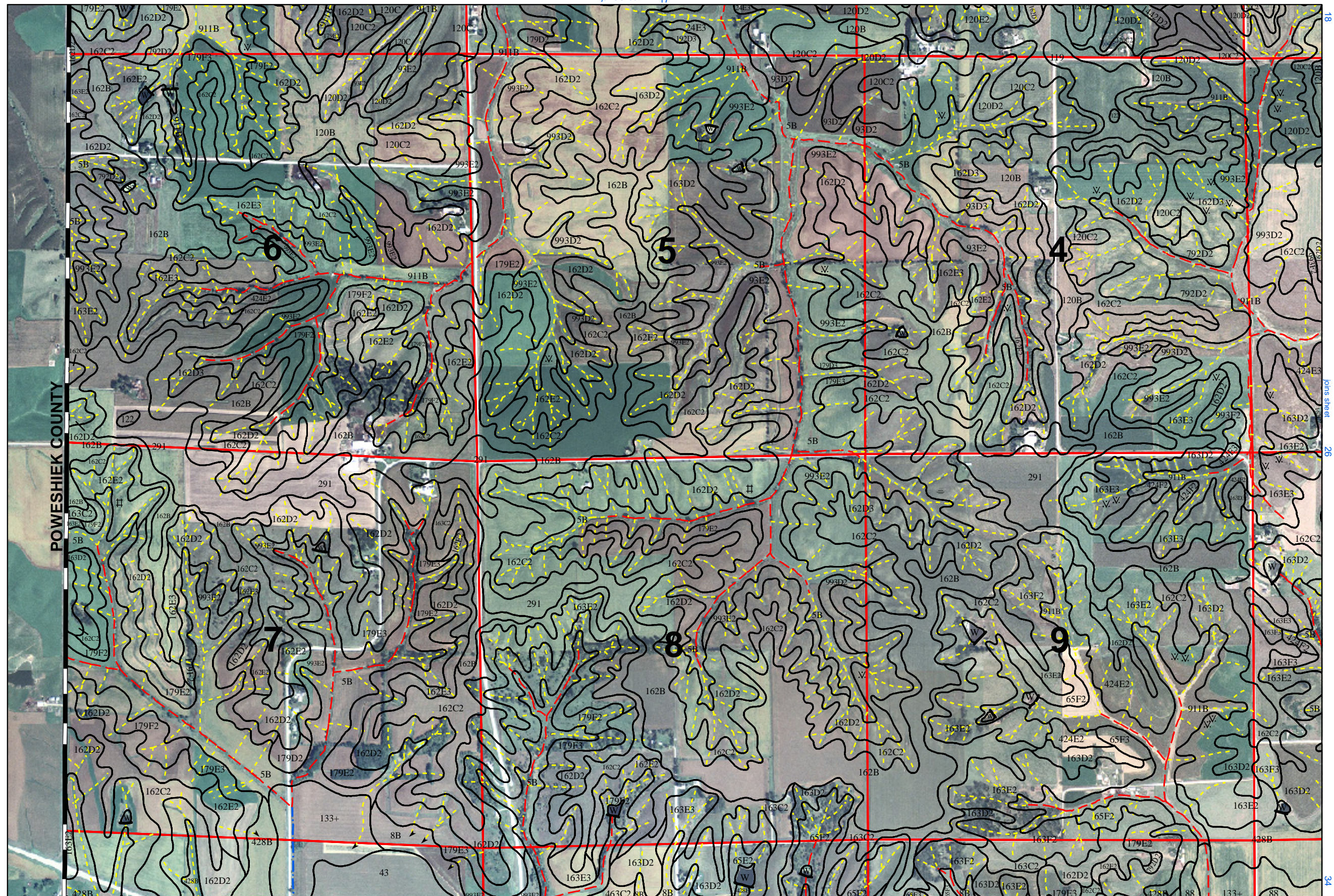


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

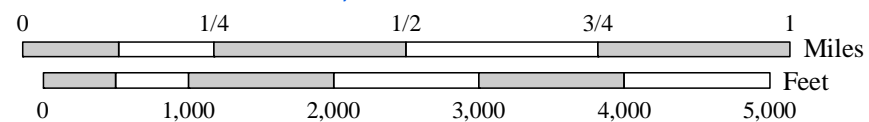


Soil Survey of Iowa County, Iowa





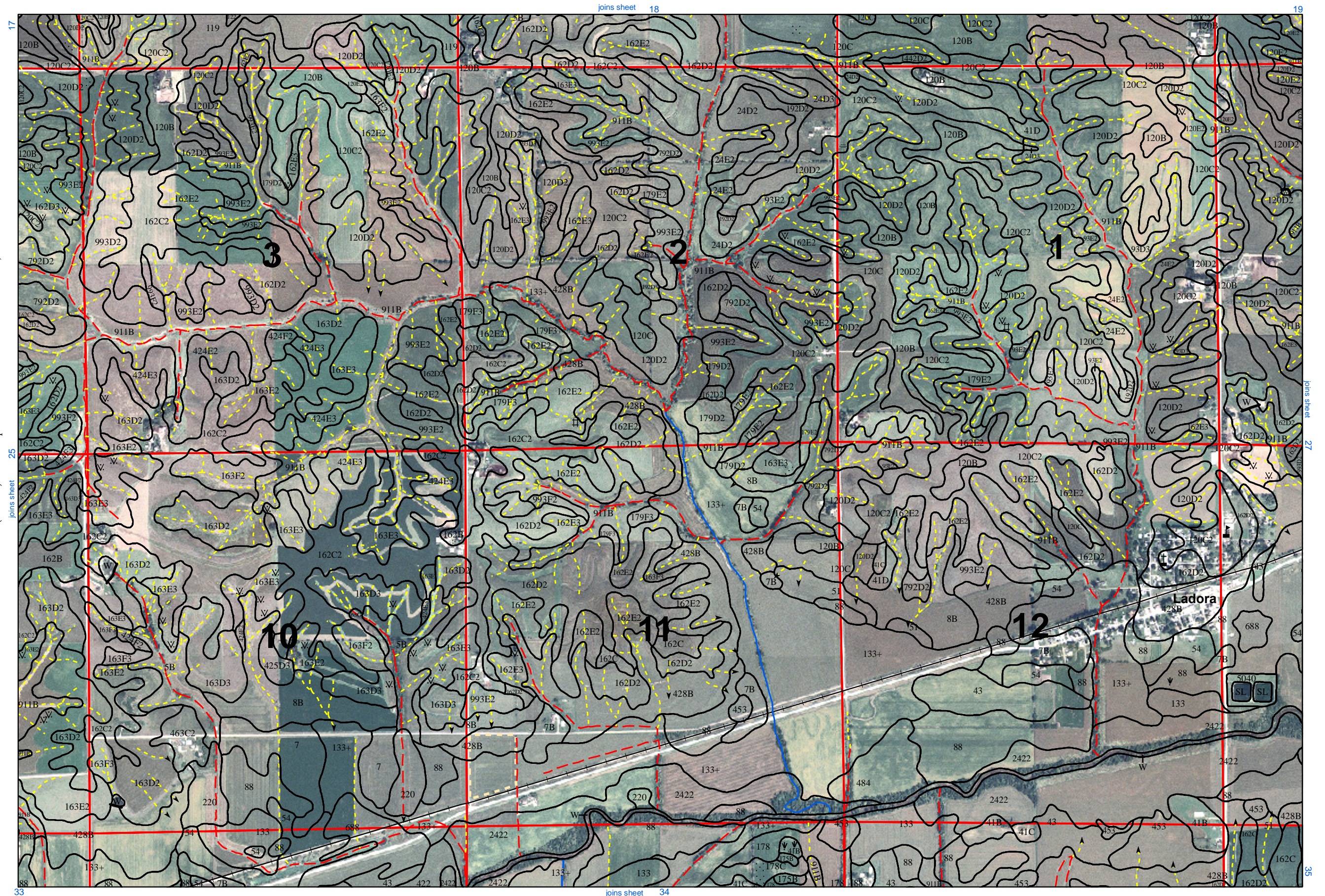
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



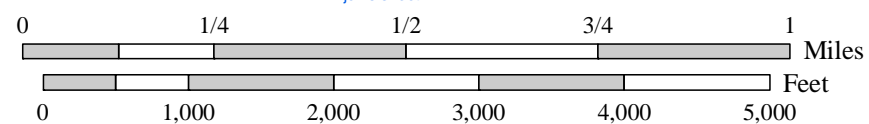
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

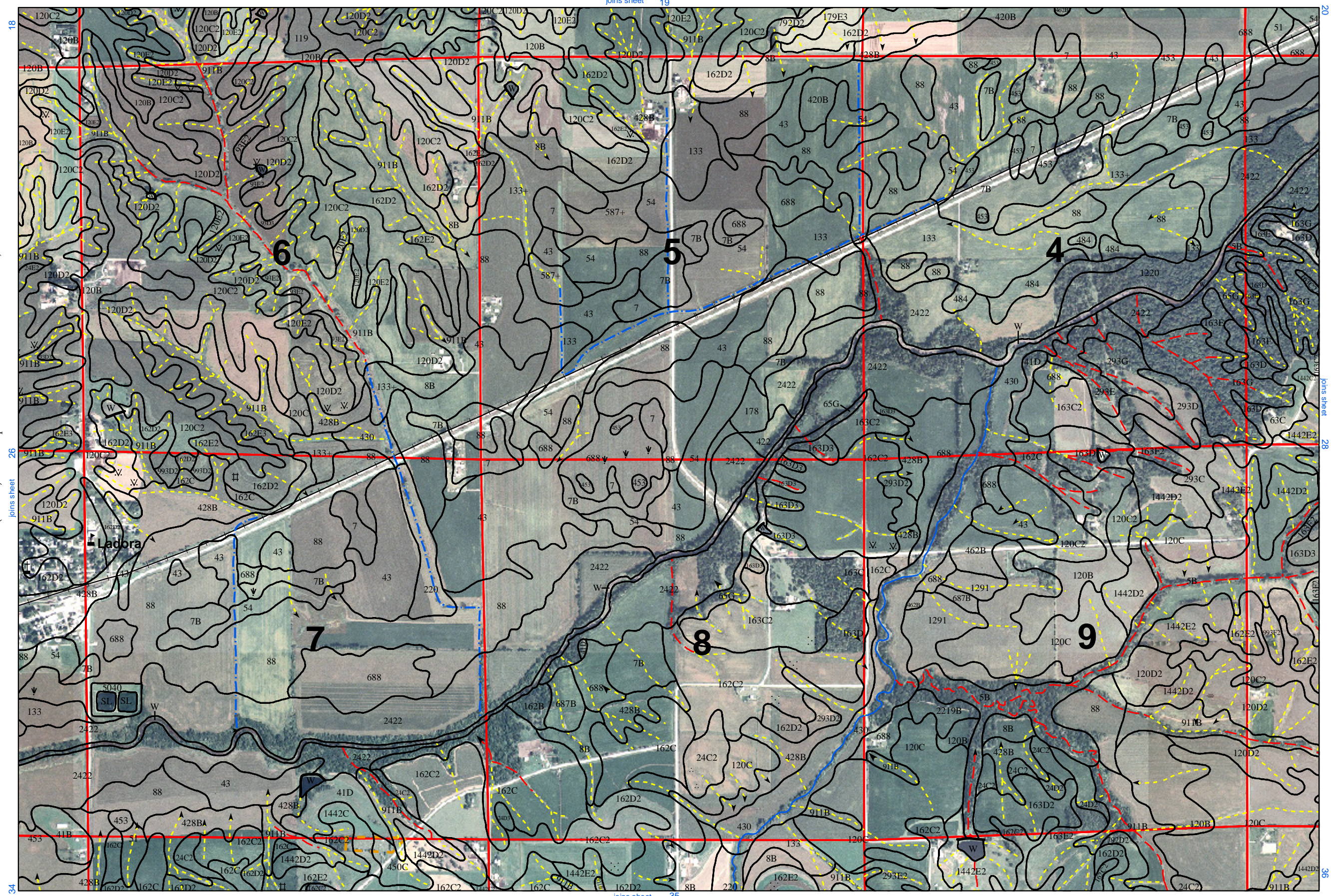


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

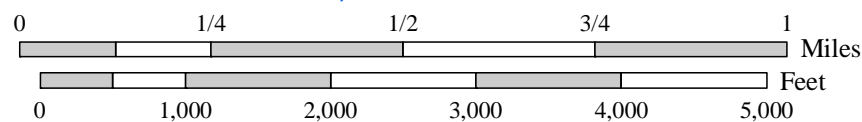


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

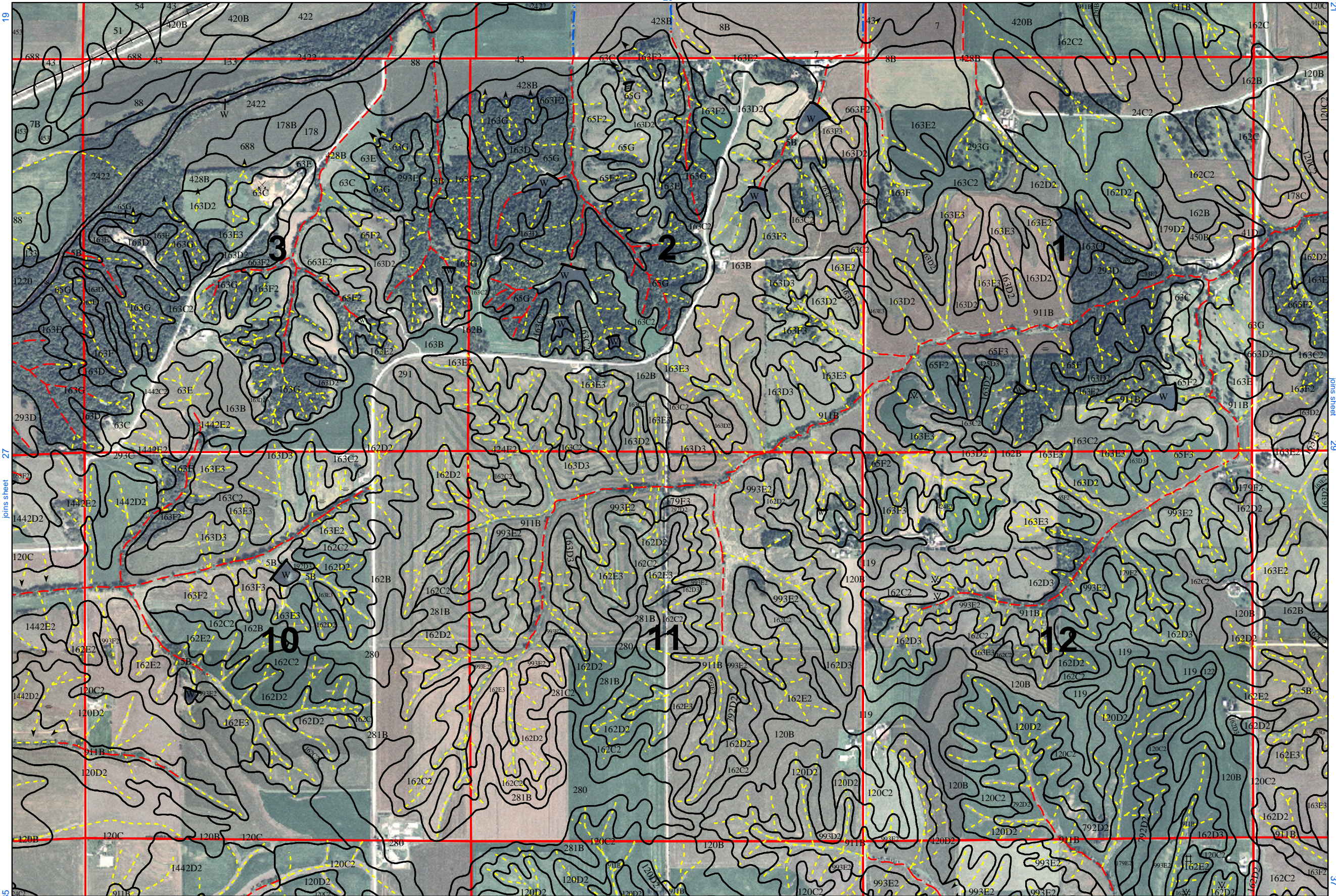


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

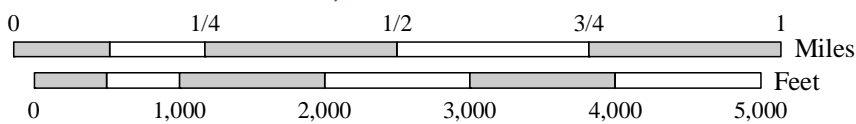


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



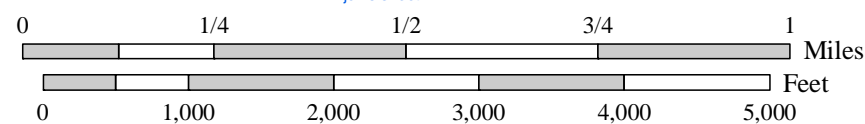
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

(2)

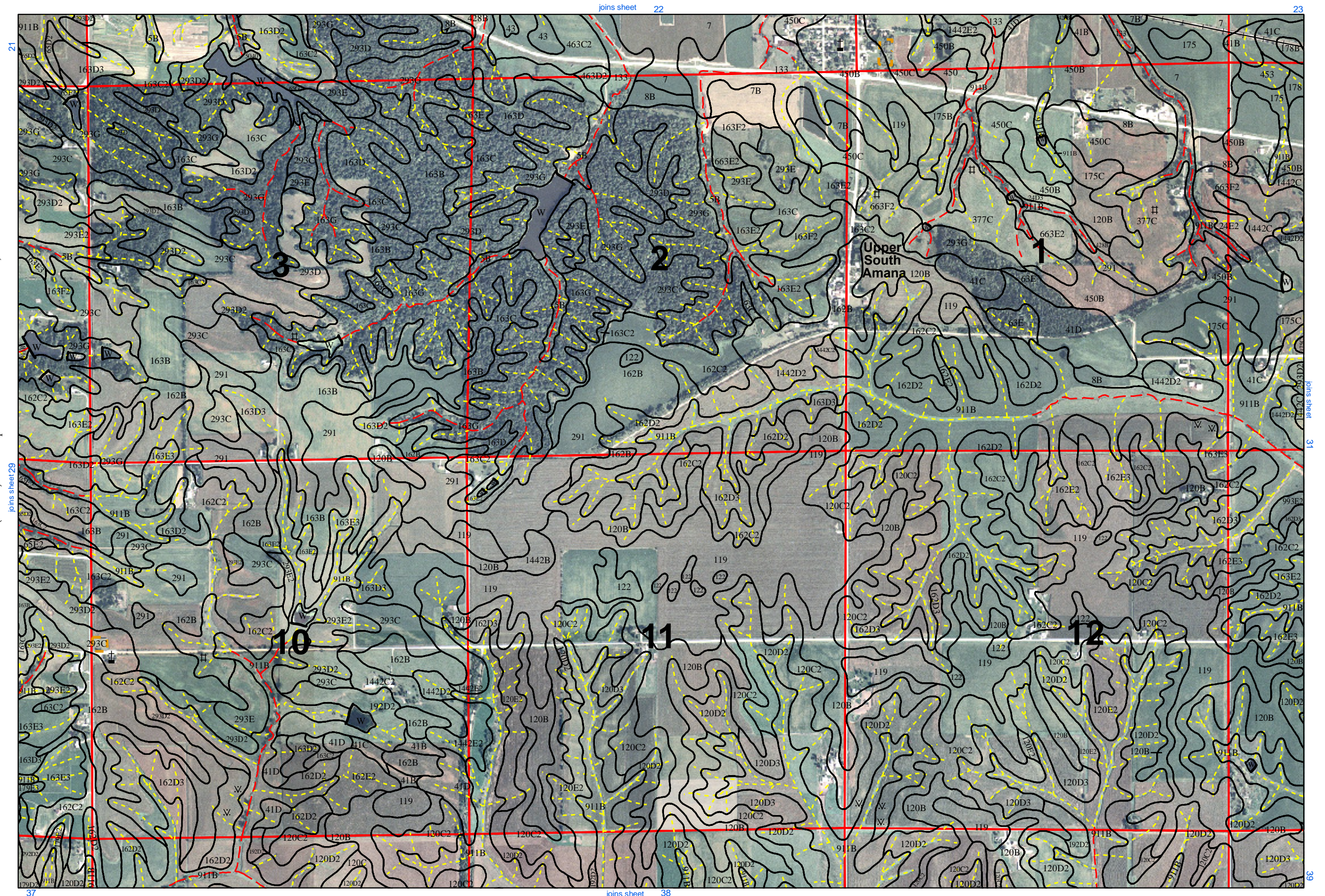


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

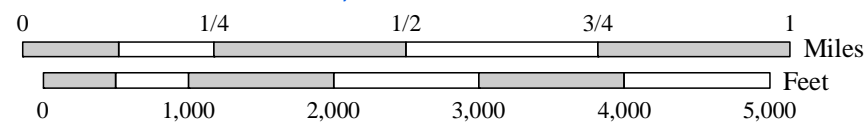


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

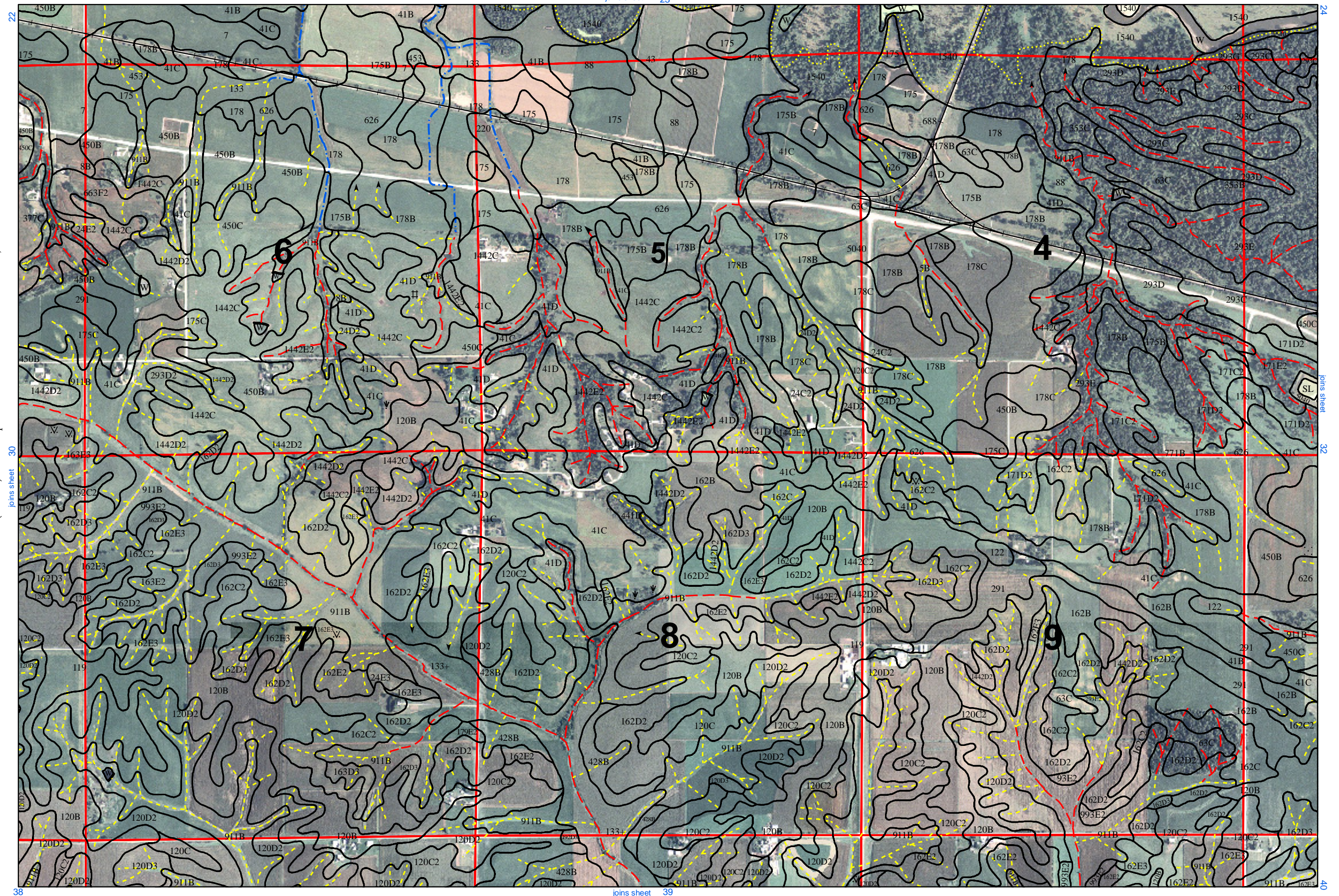


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

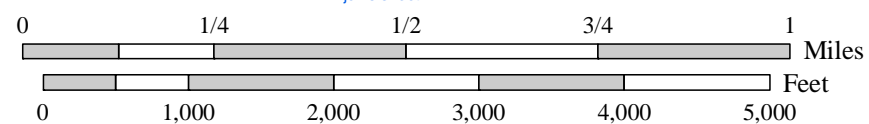


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

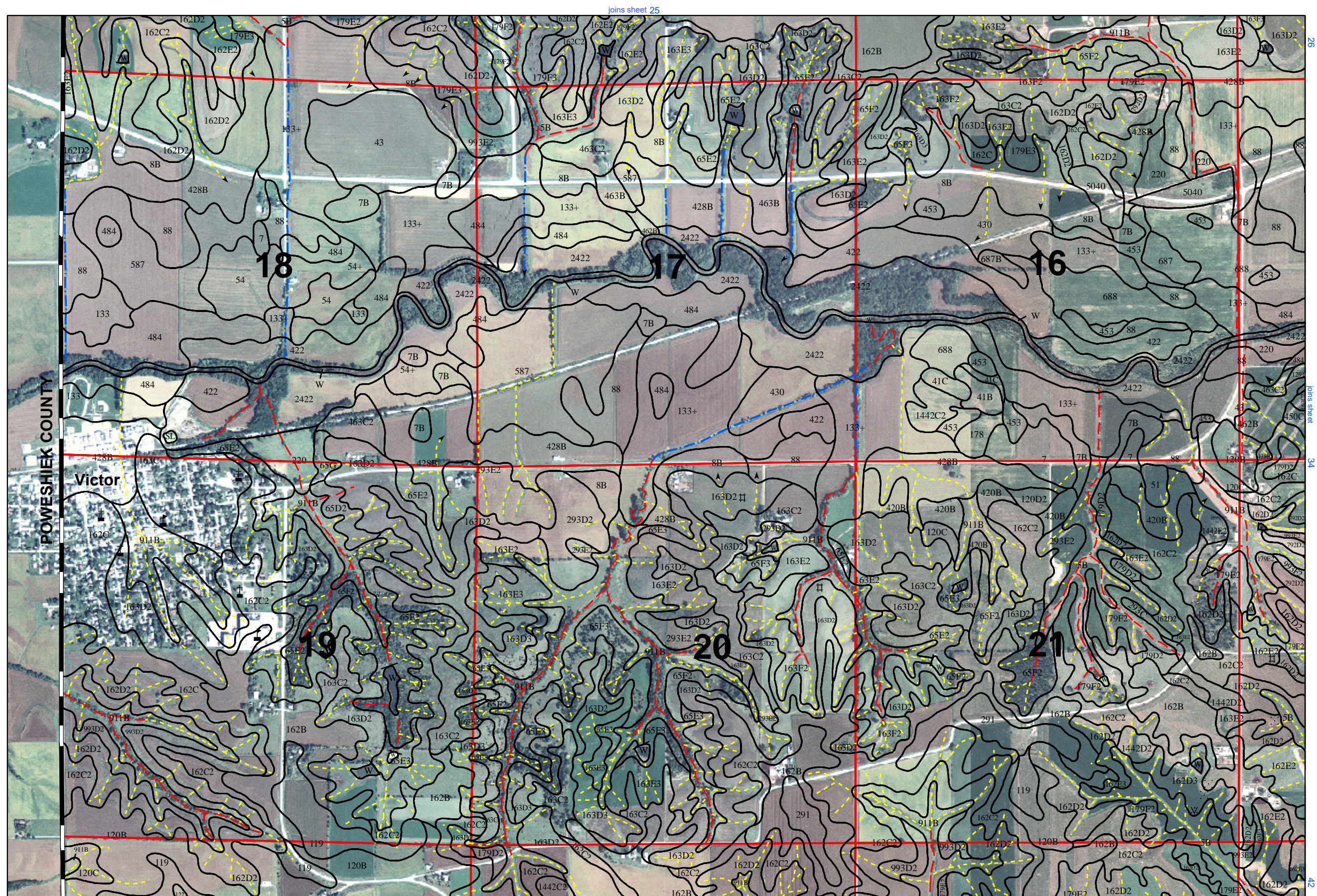


United States Department of Agriculture
 **NRCS** Natural Resources
 Conservation Service

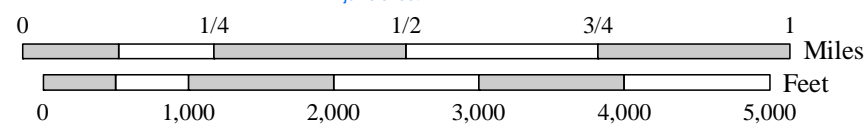
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

(3)



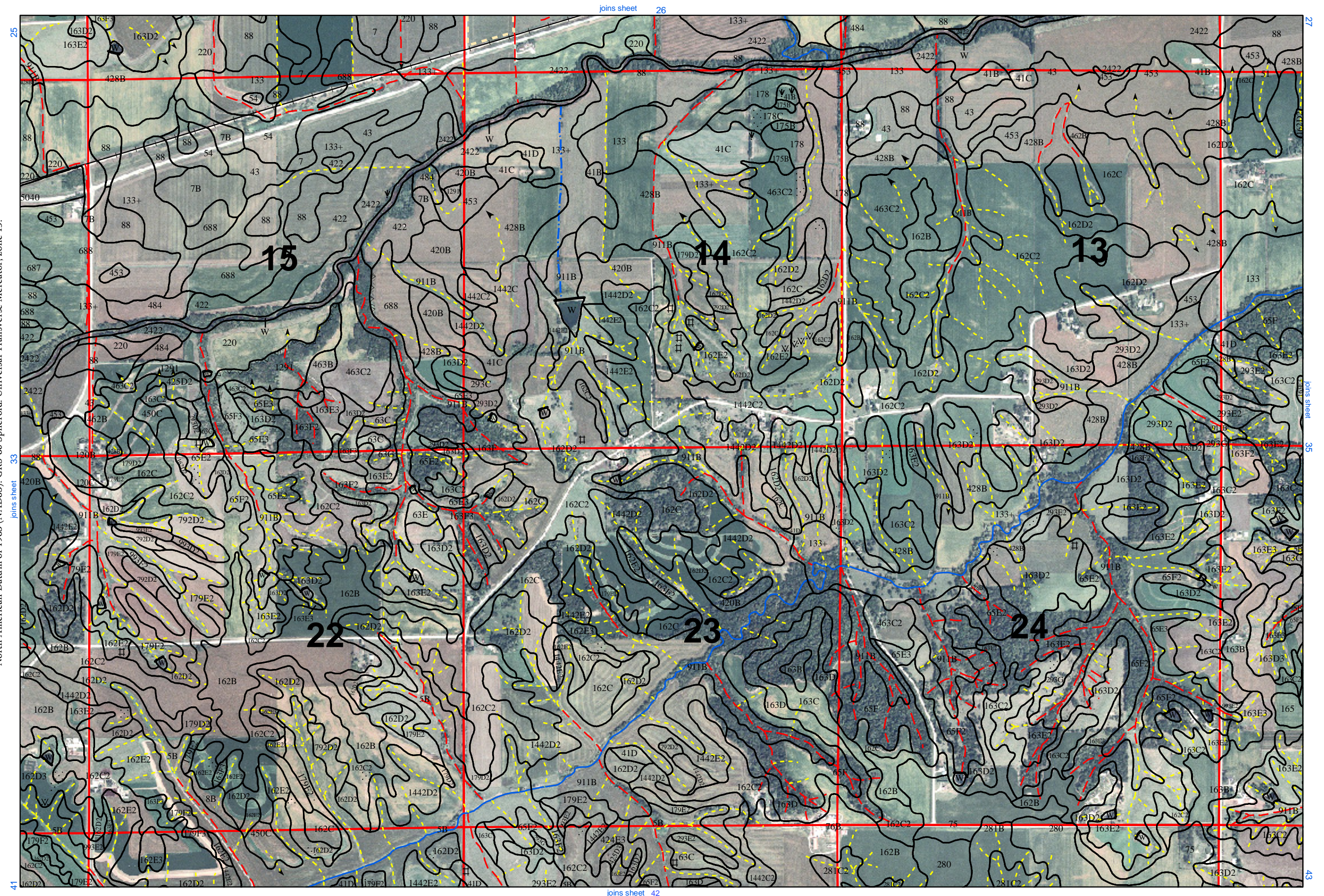
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



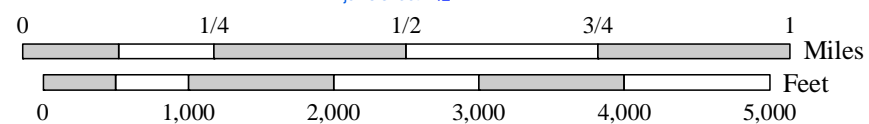
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

4)



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



Soil Survey of Iowa County, Iowa

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

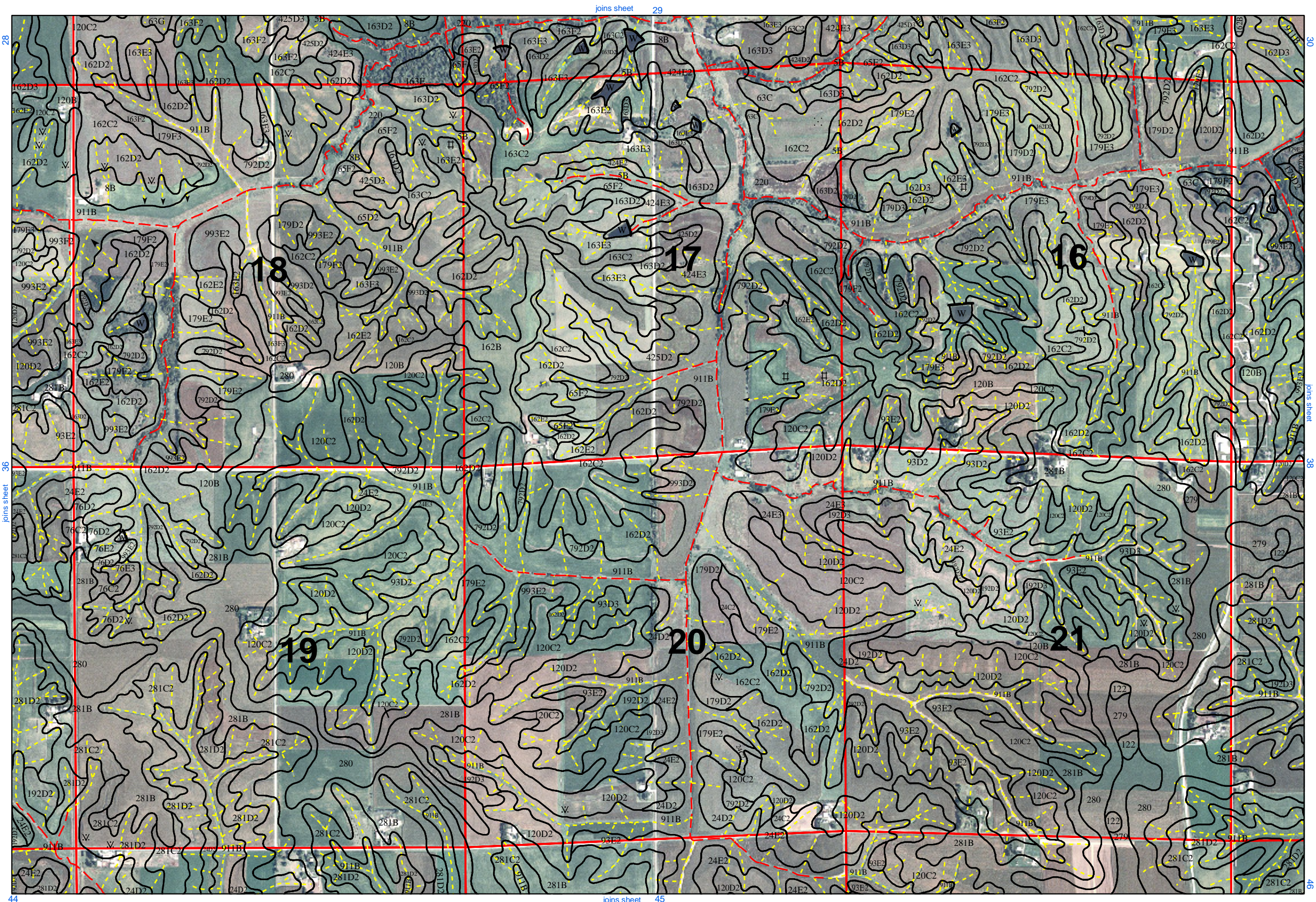


United States Department of Agriculture
 **NRCS** Natural Resources
 Conservation Service

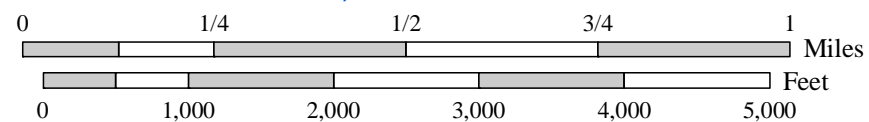
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

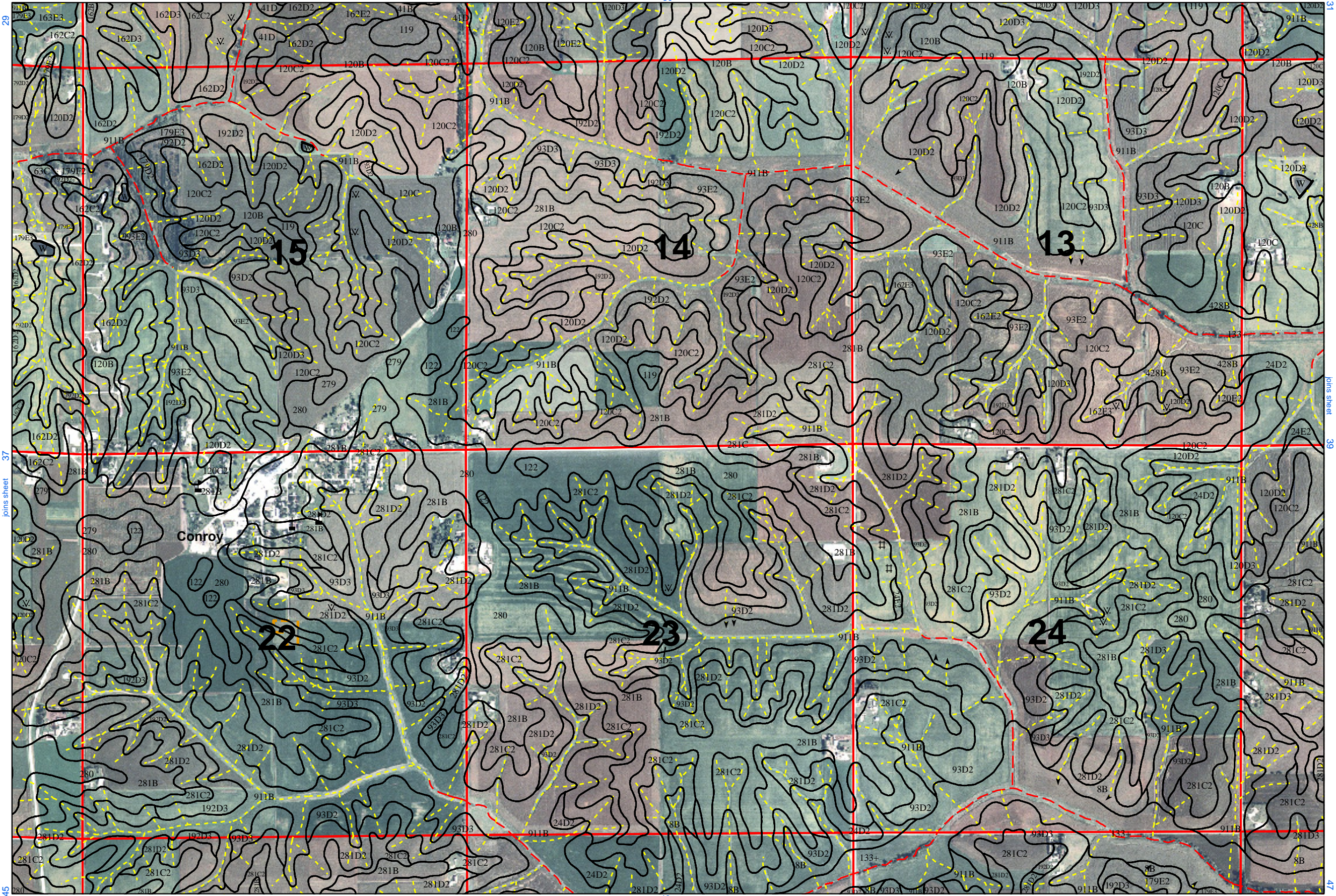


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

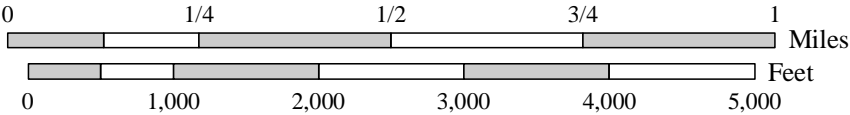


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

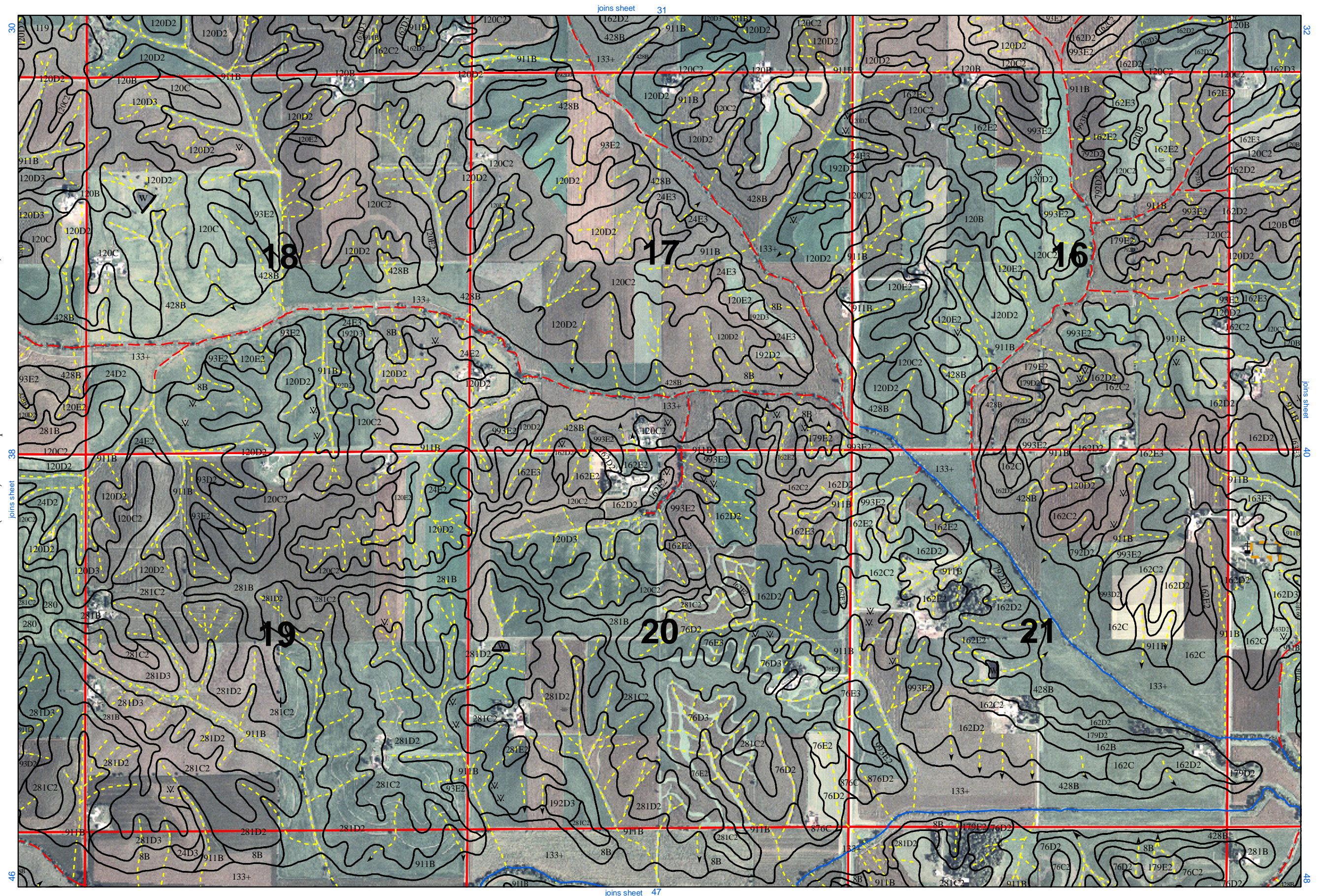


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

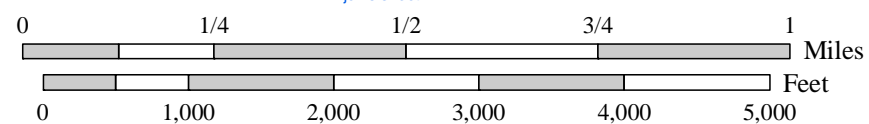


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



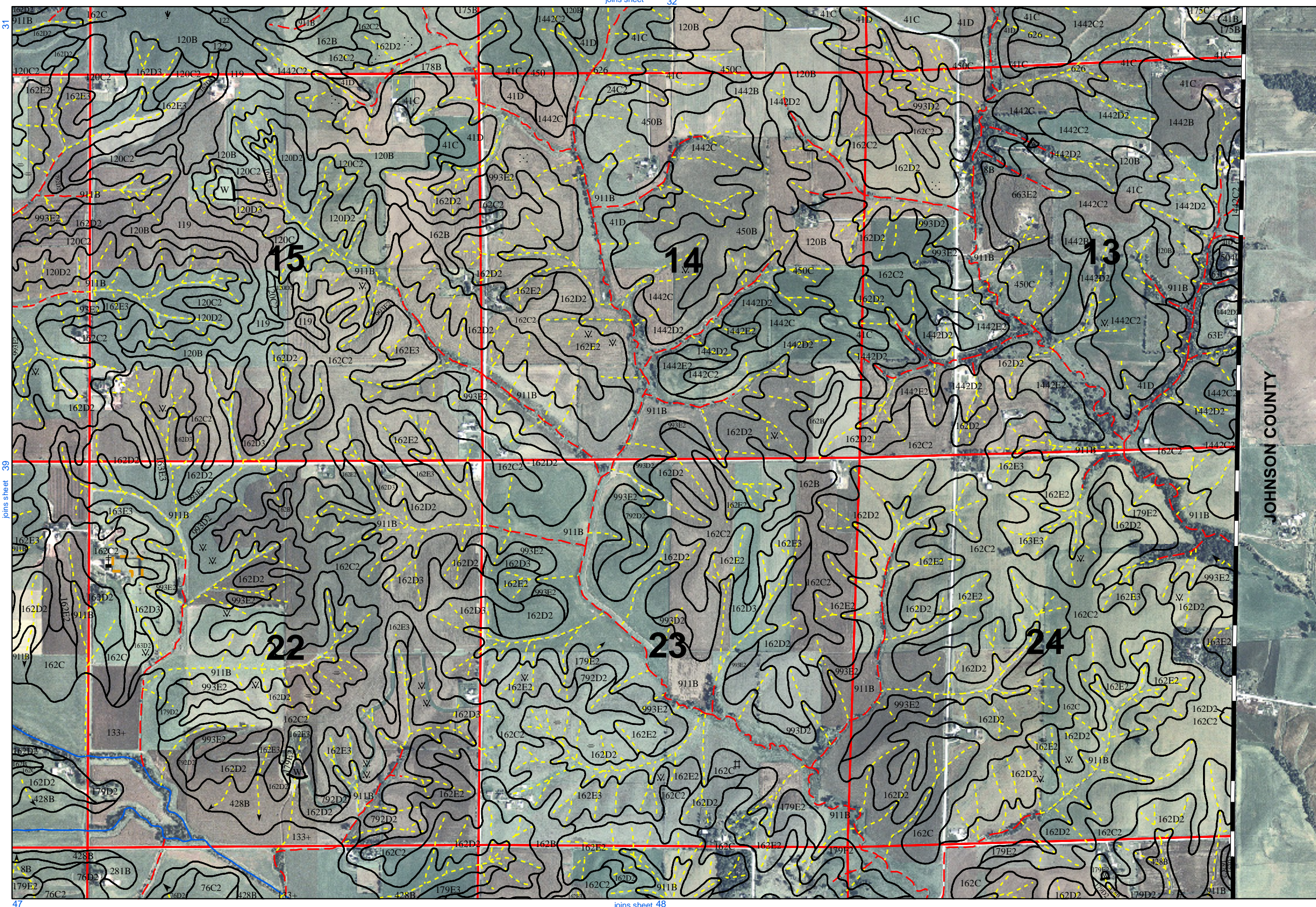
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



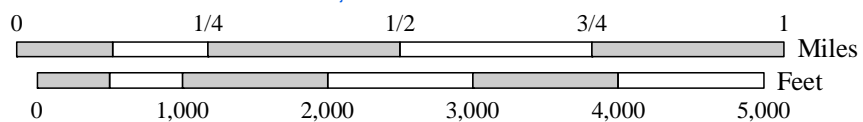
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

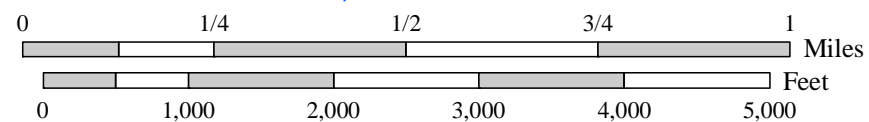
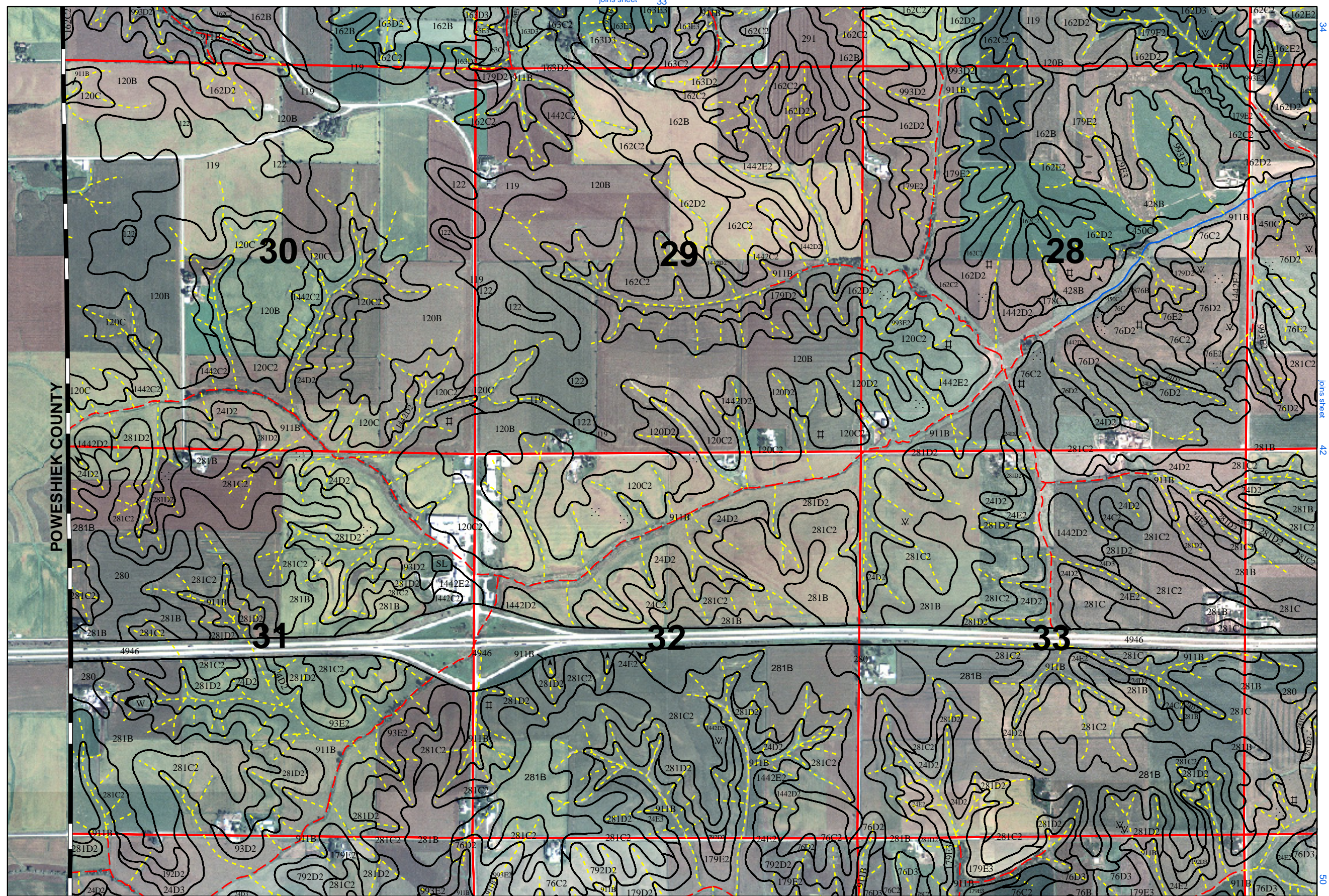


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



Soil Survey of Iowa County, Iowa

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

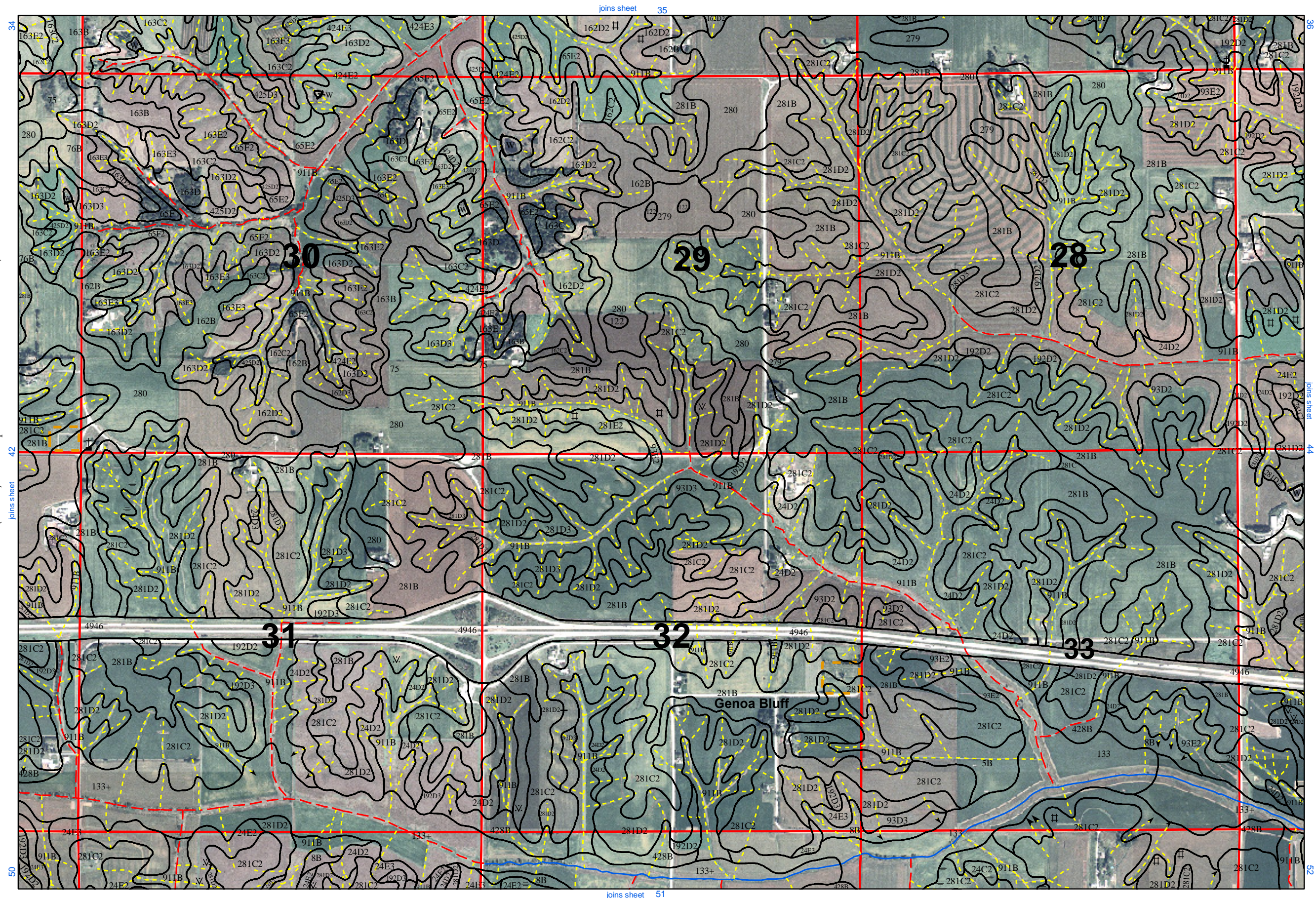


United States Department of Agriculture
 **NRCS** Natural Resources
 Conservation Service

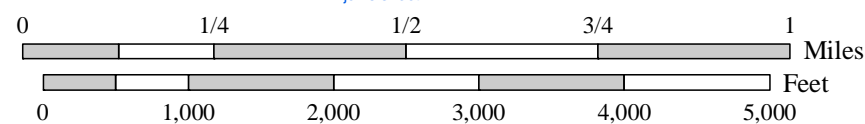
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



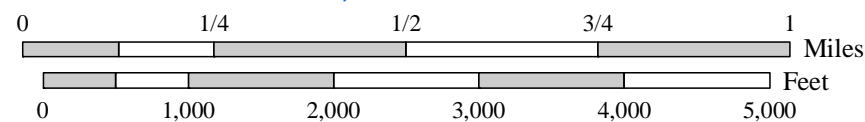
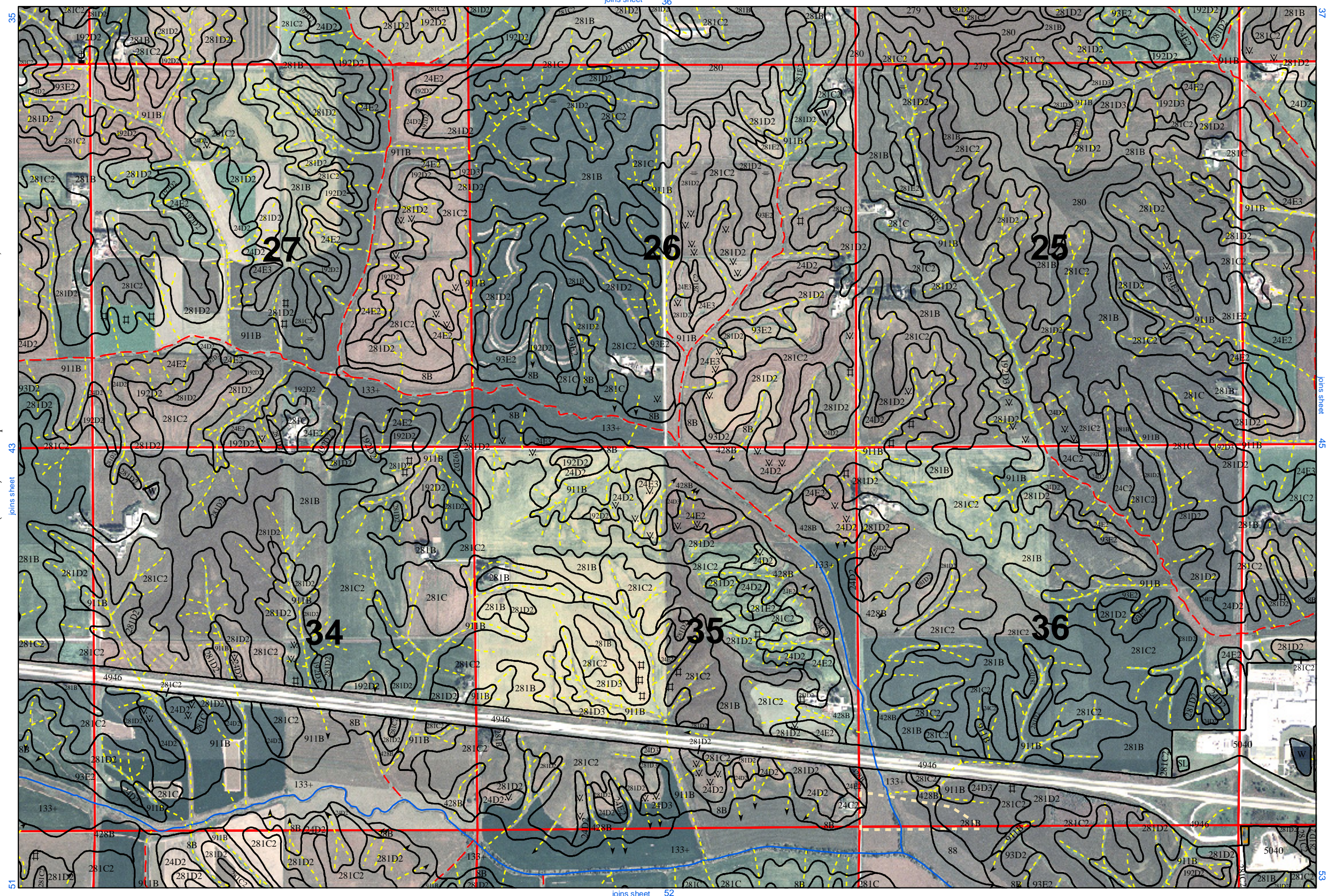
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

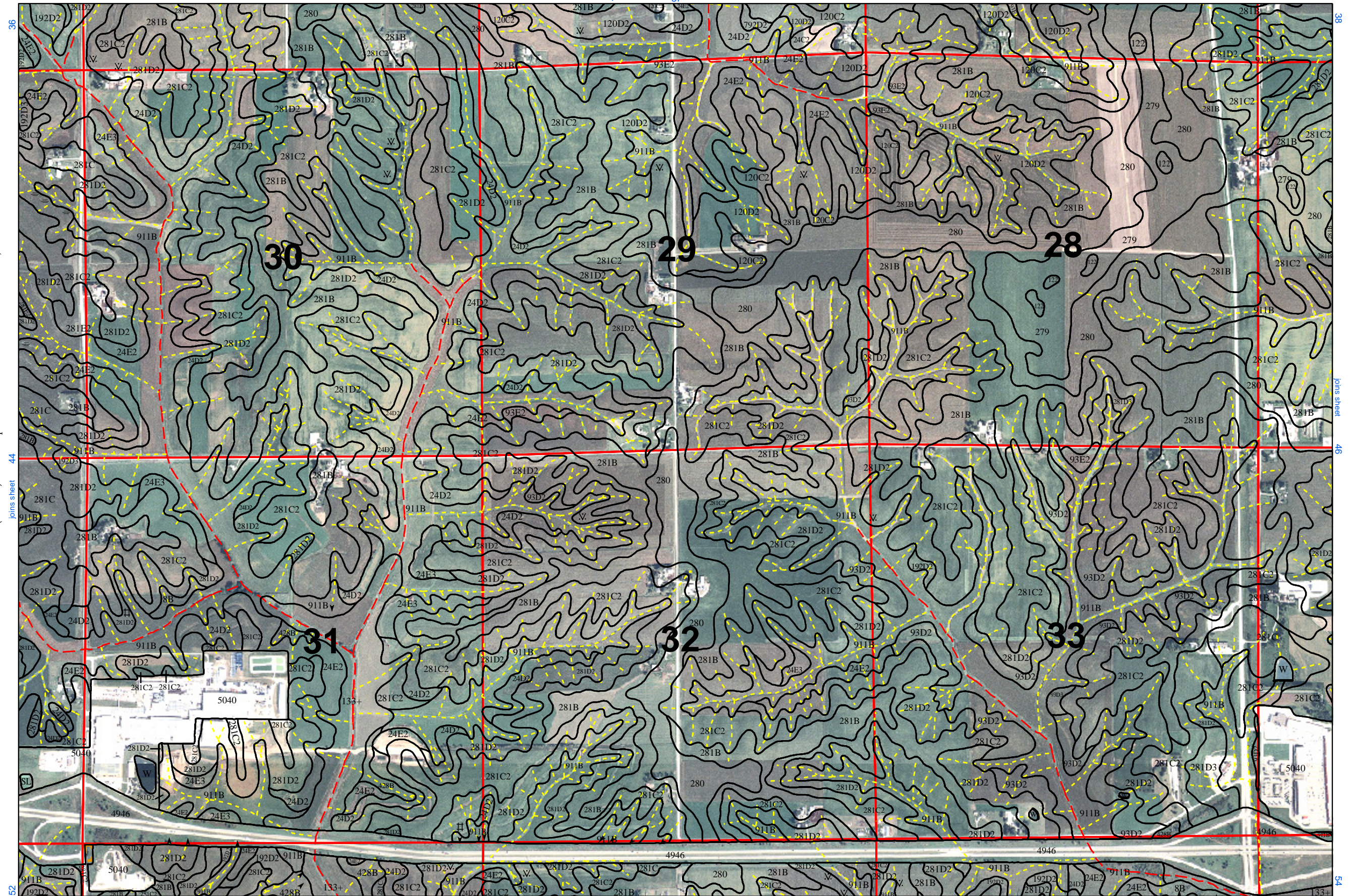
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



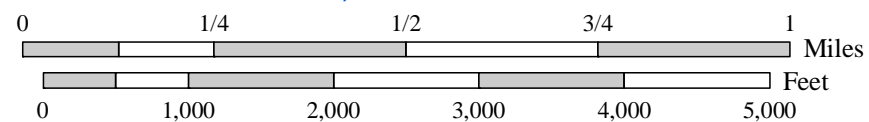
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



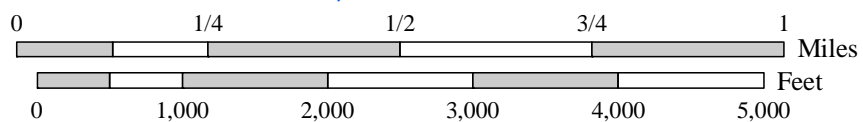
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



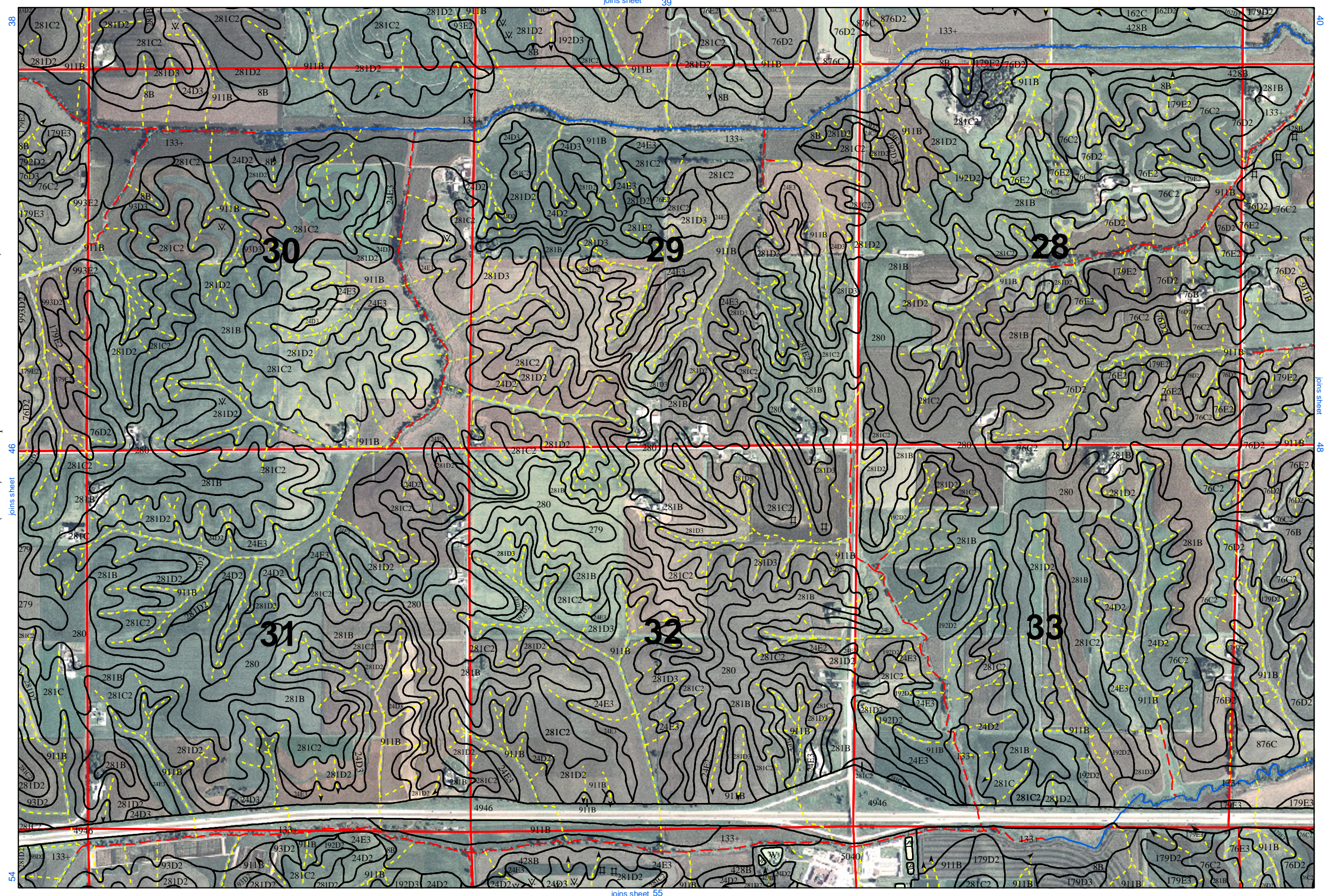
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



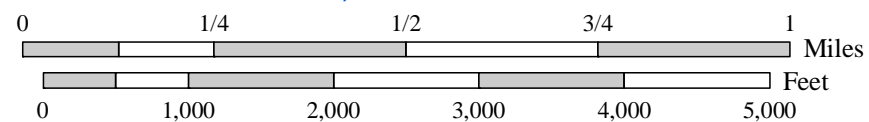
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

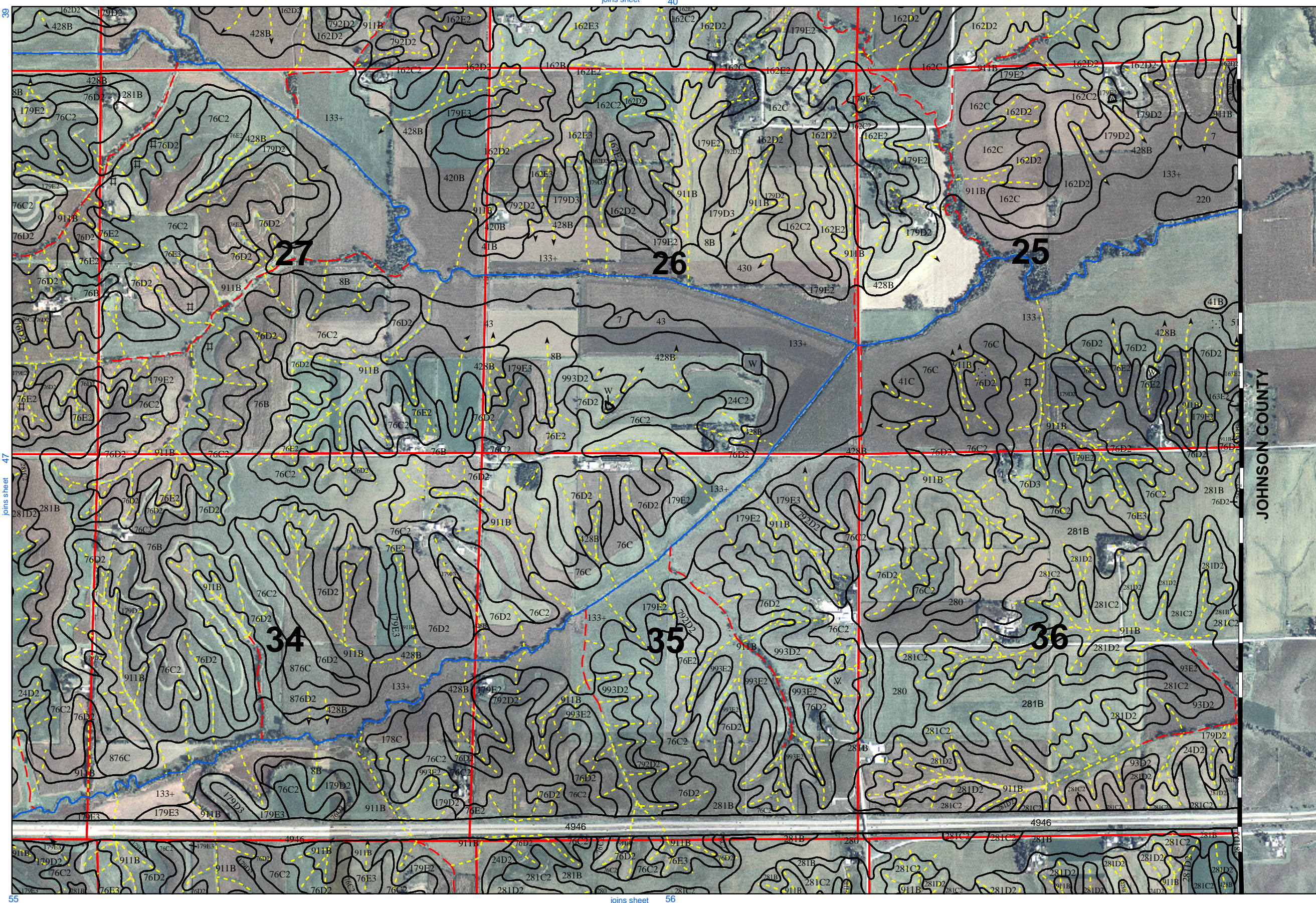


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

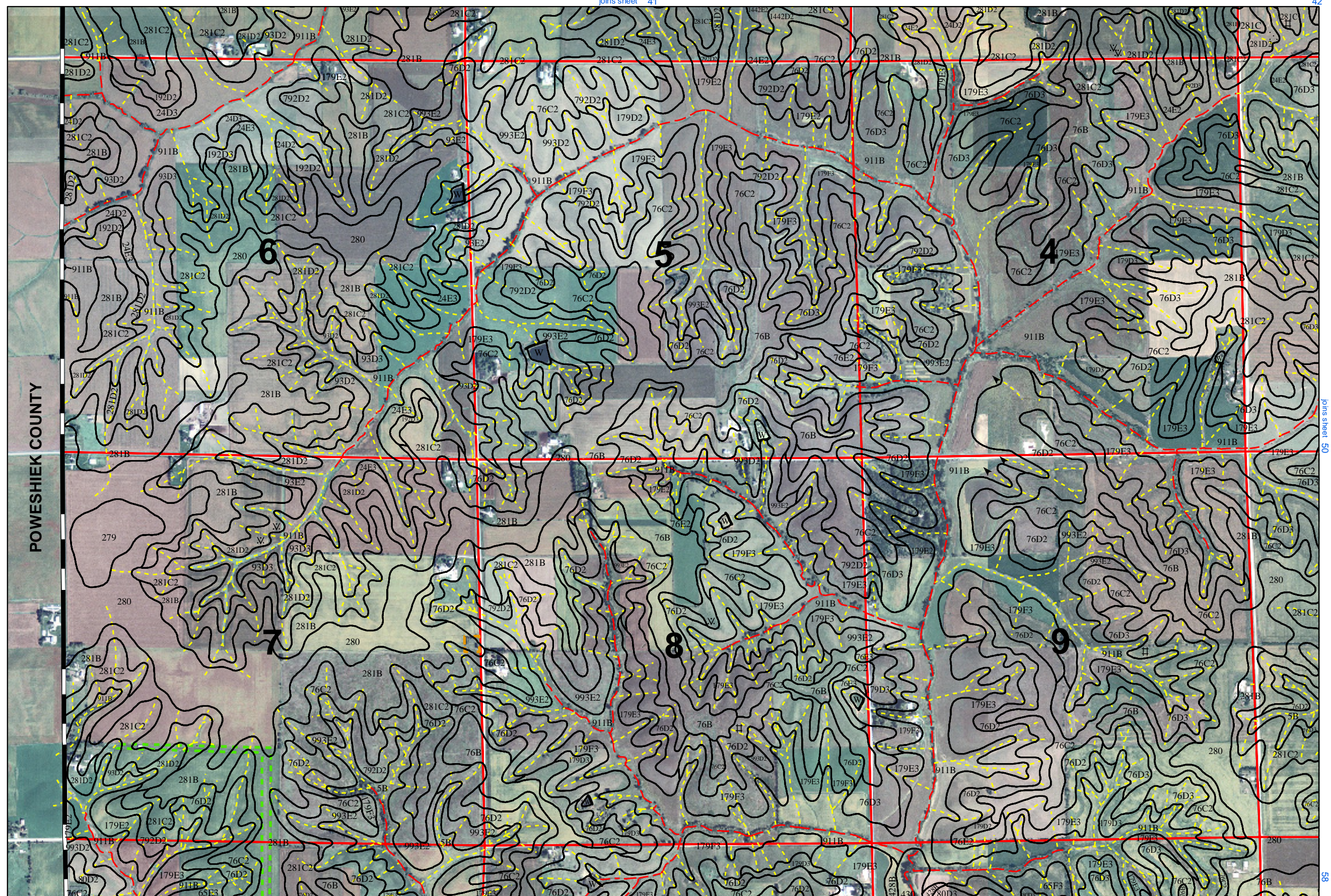
North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



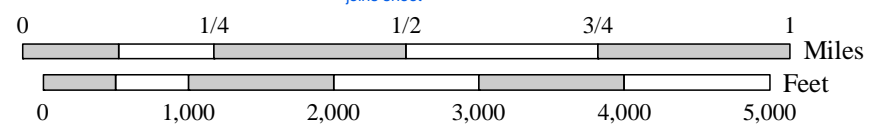
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



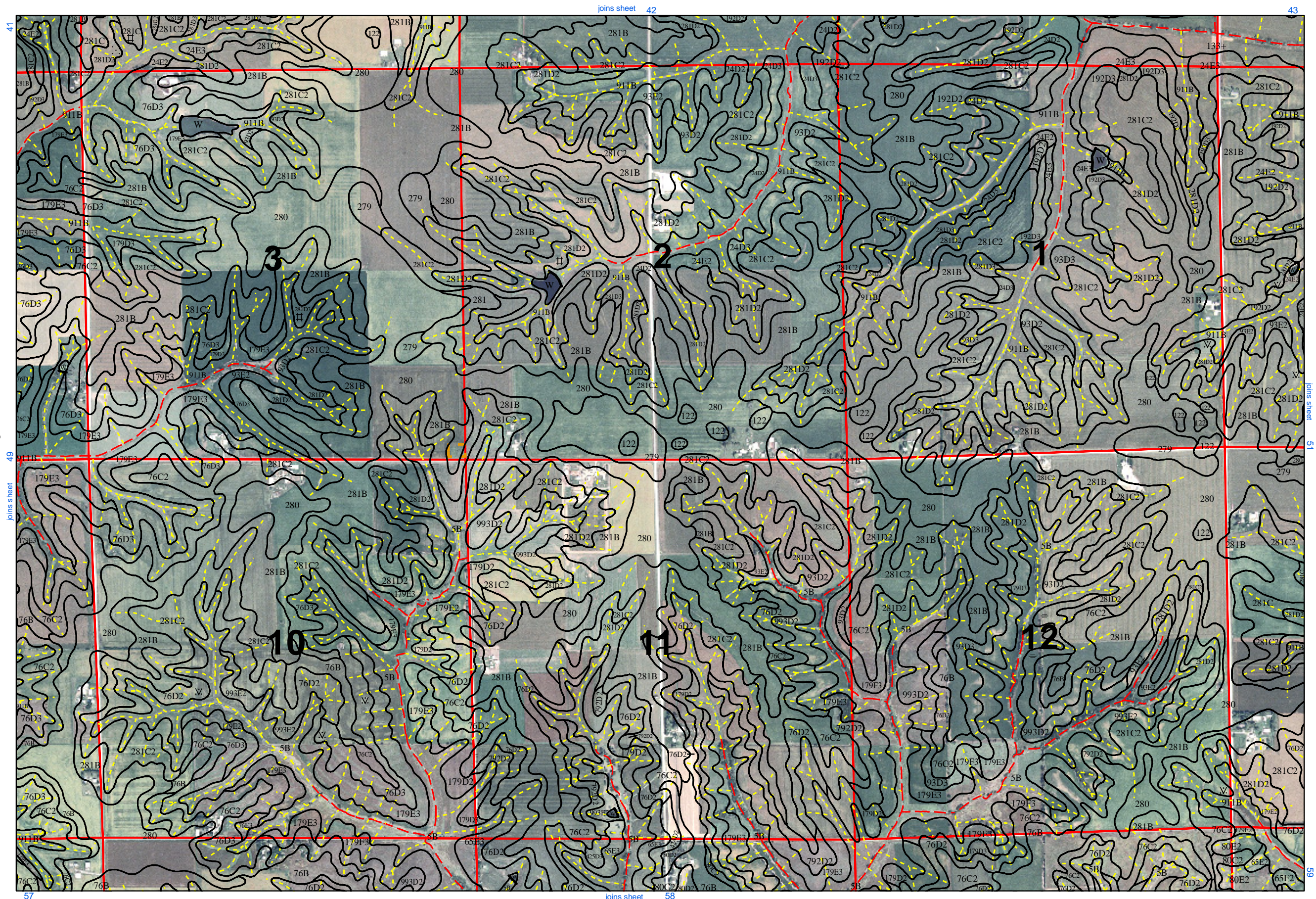
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



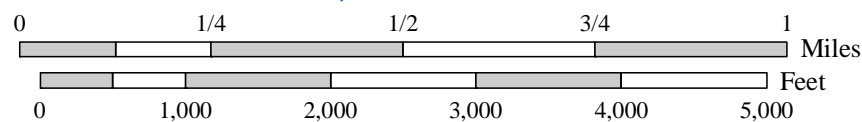
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



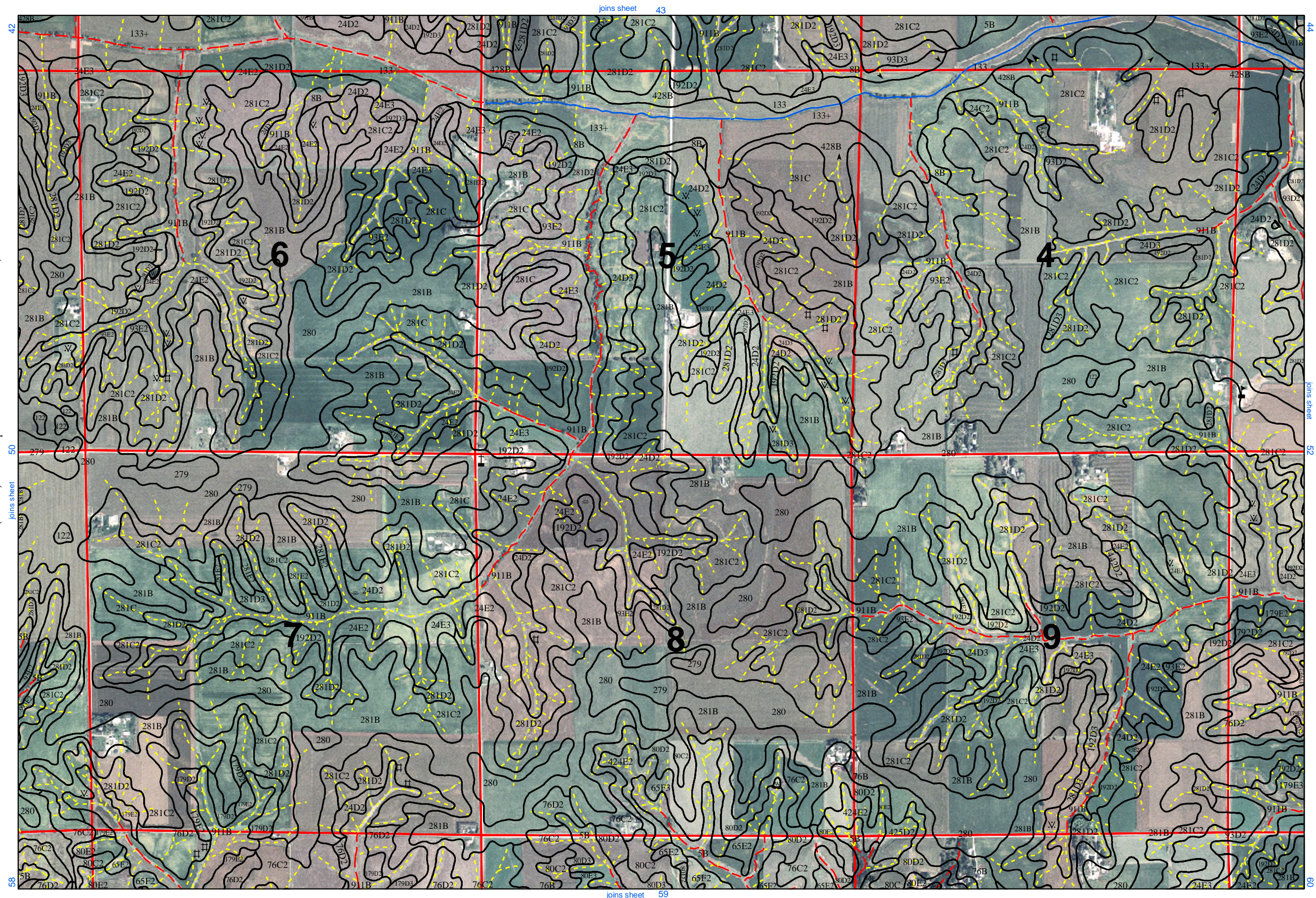
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



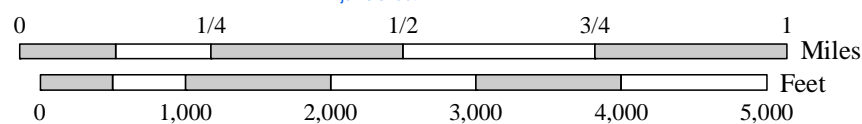
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



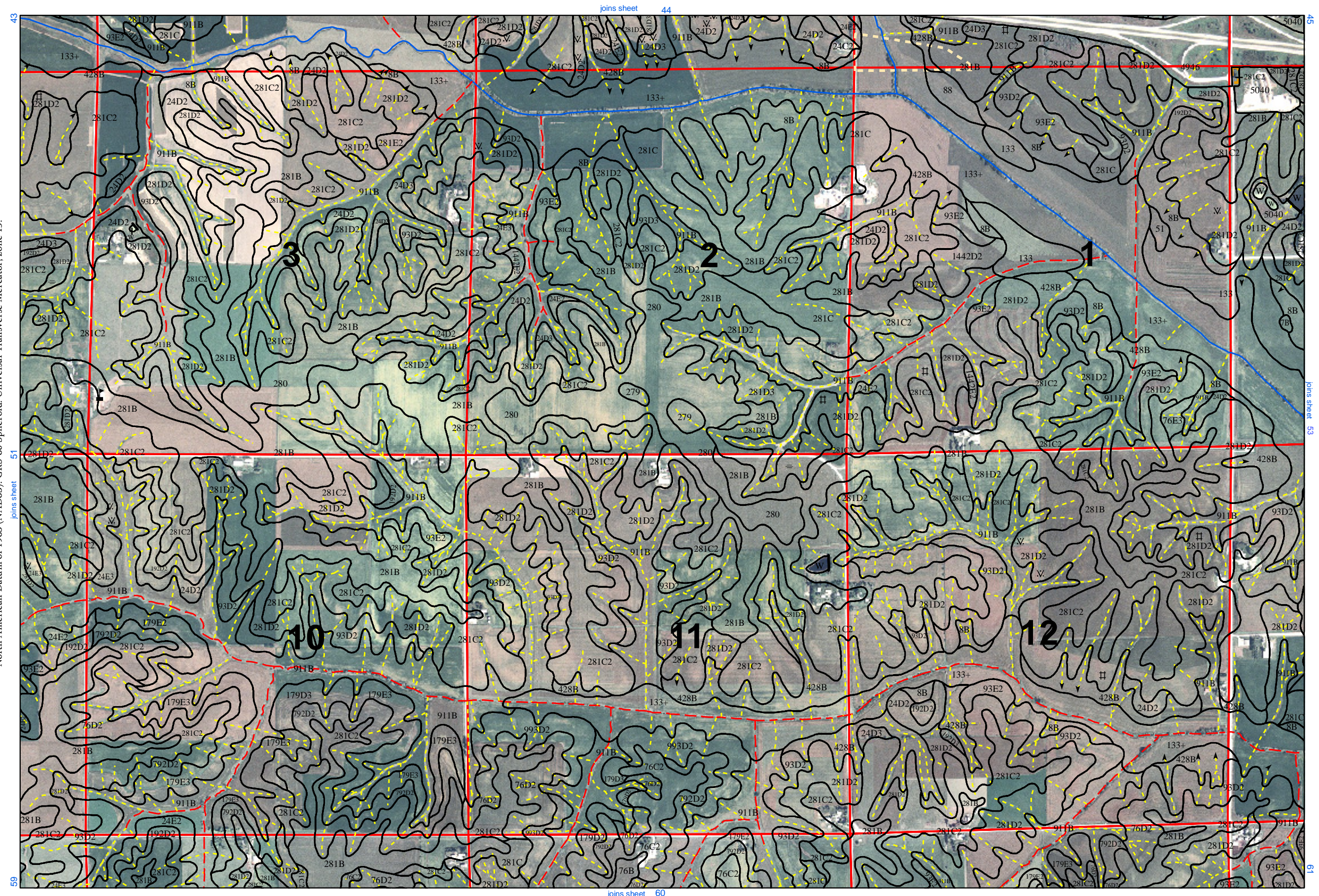
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



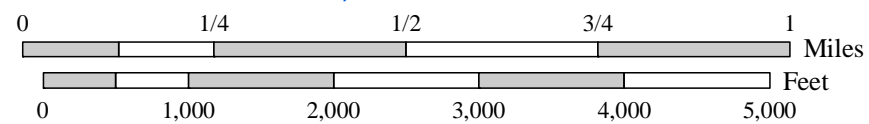
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

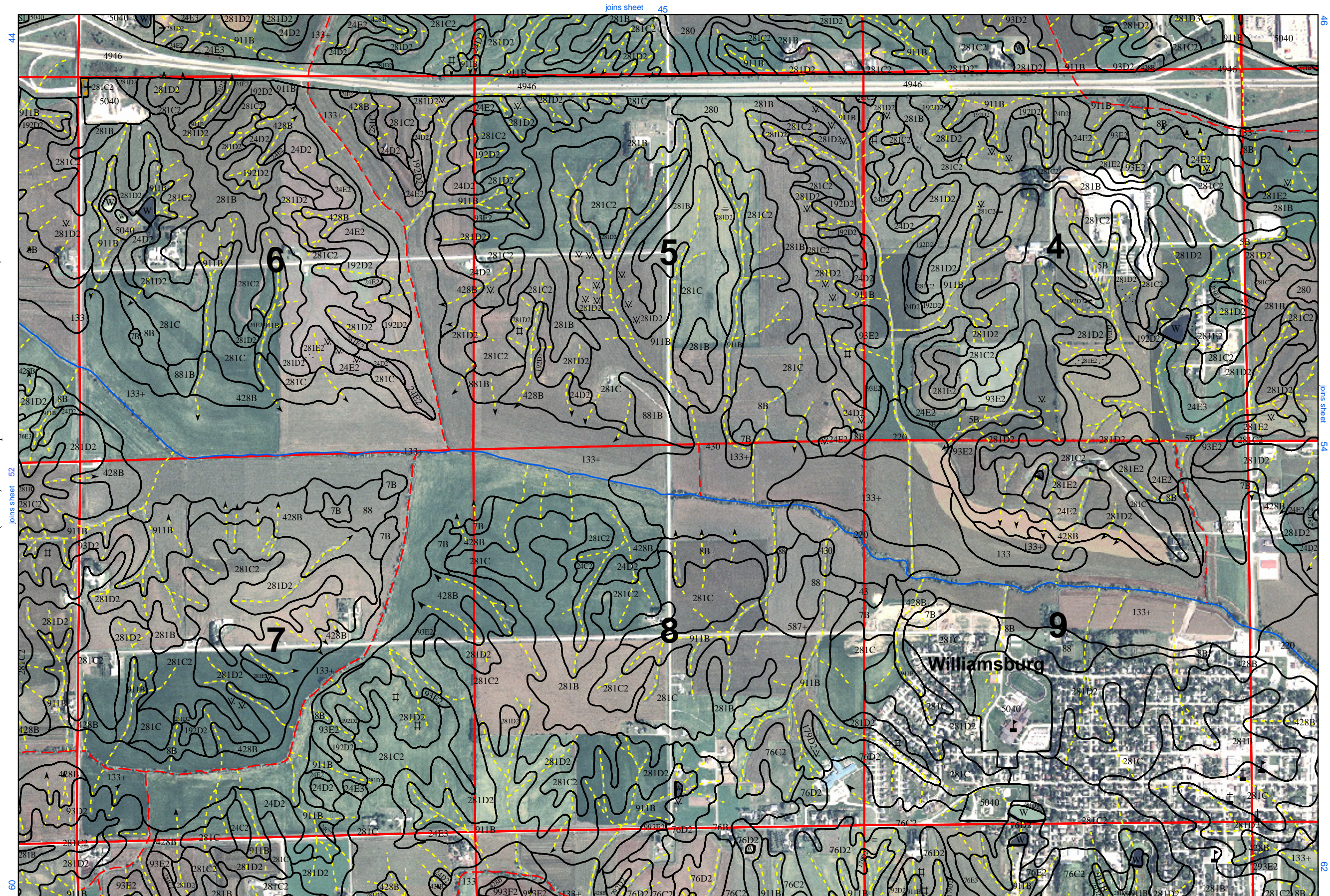


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

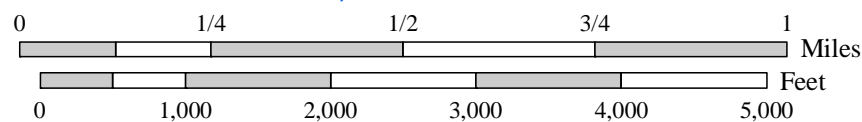


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



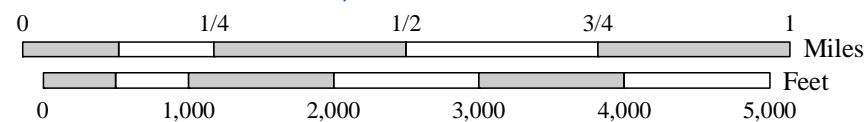
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



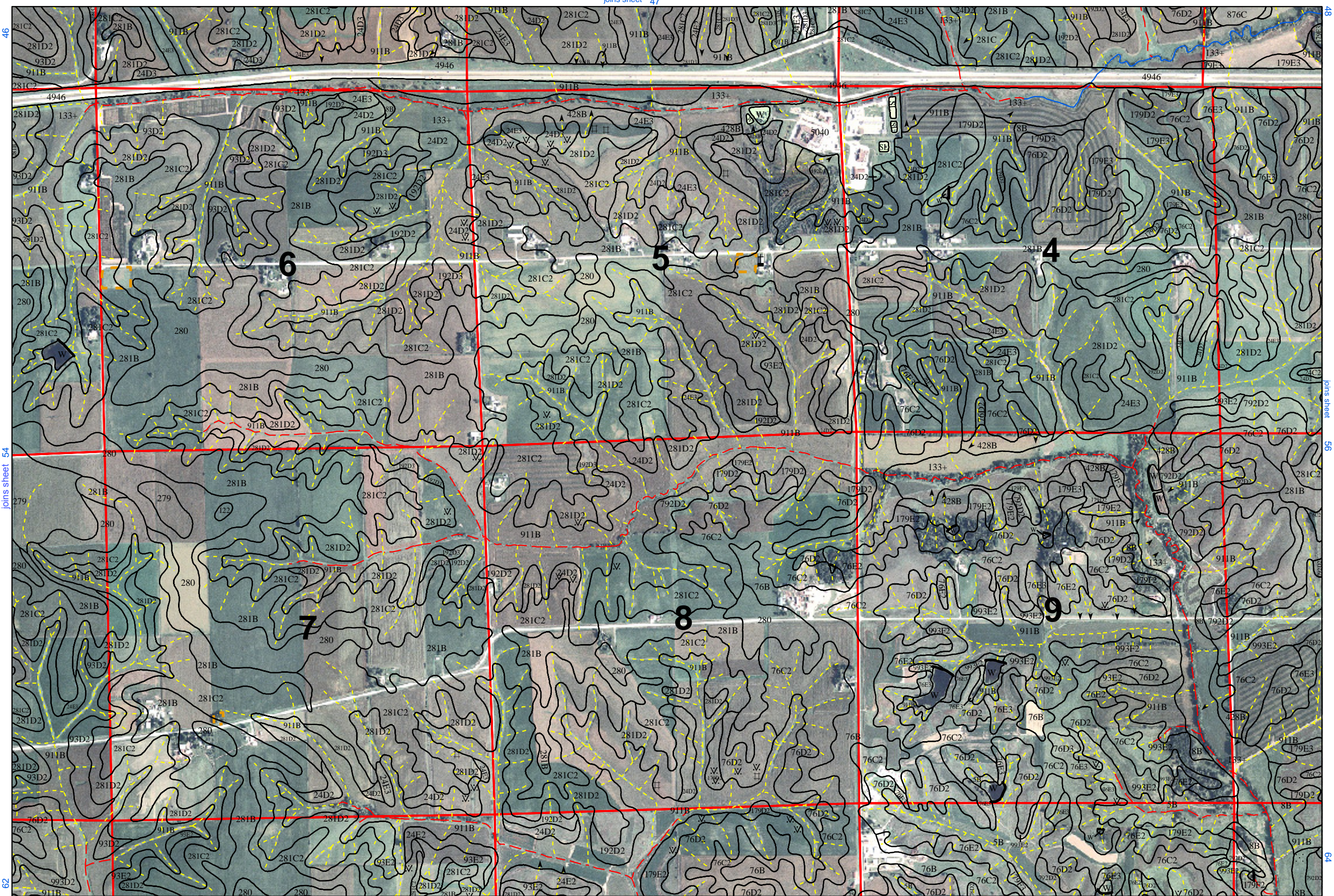
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



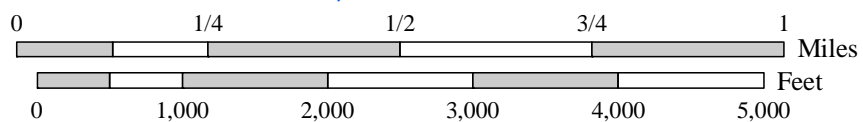
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

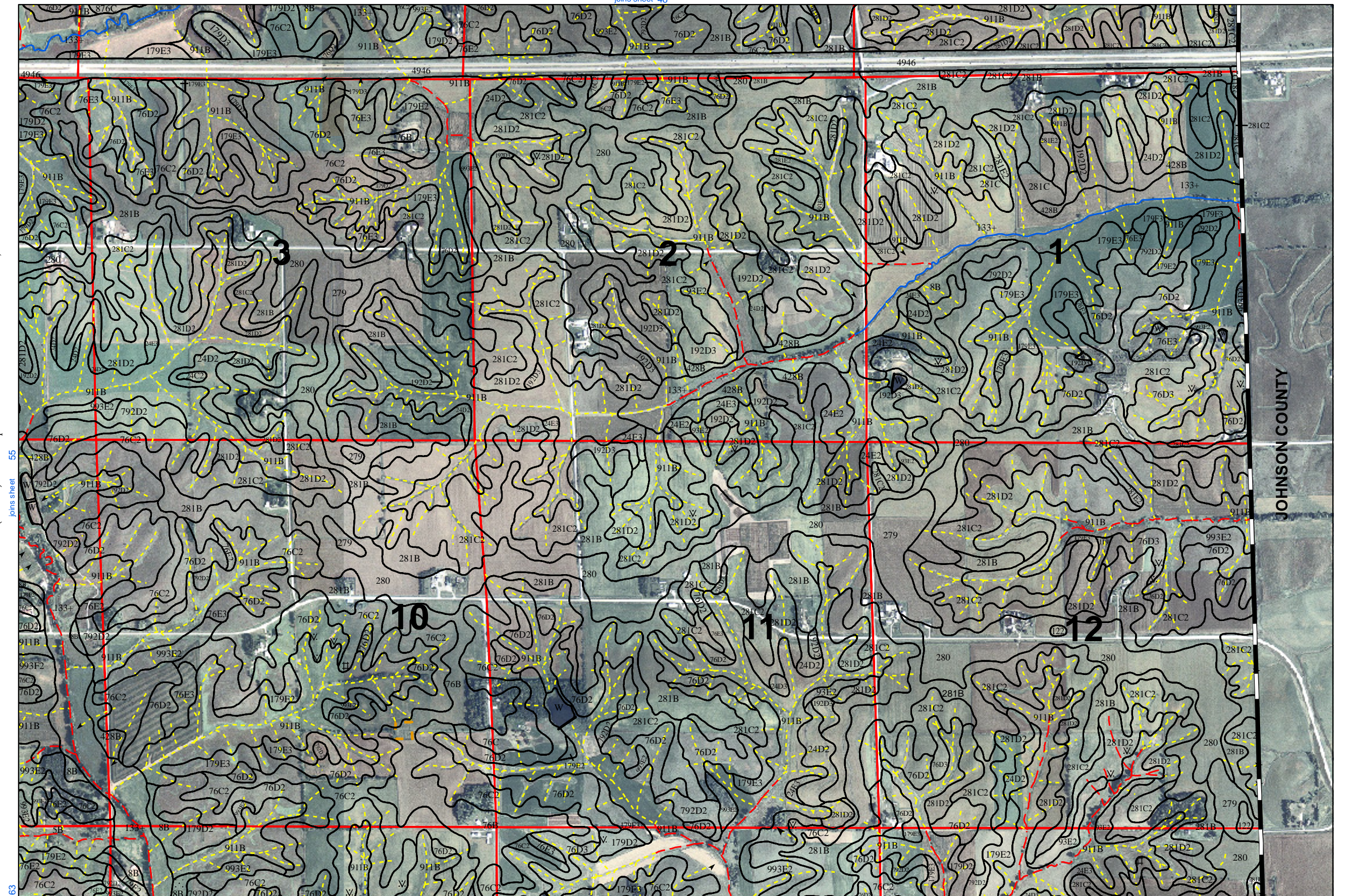


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

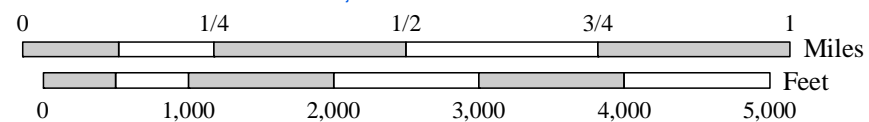
North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



Soil Survey of Iowa County, Iowa



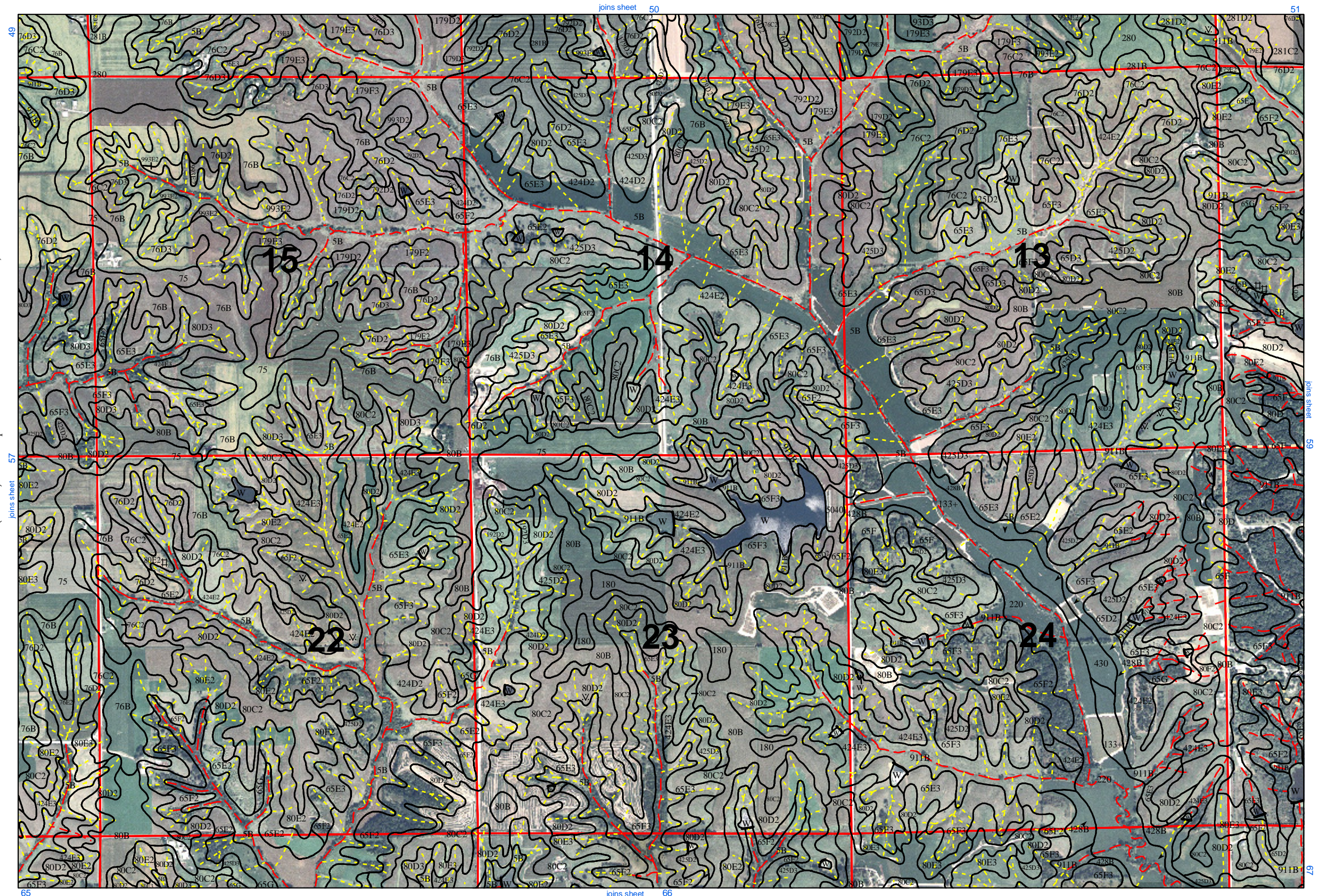
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



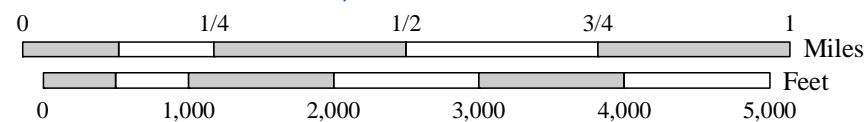
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



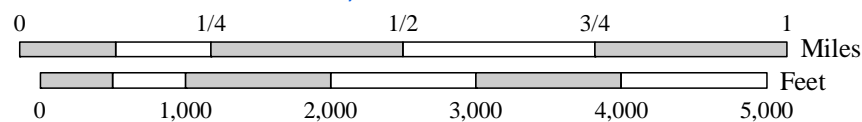
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophoto Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

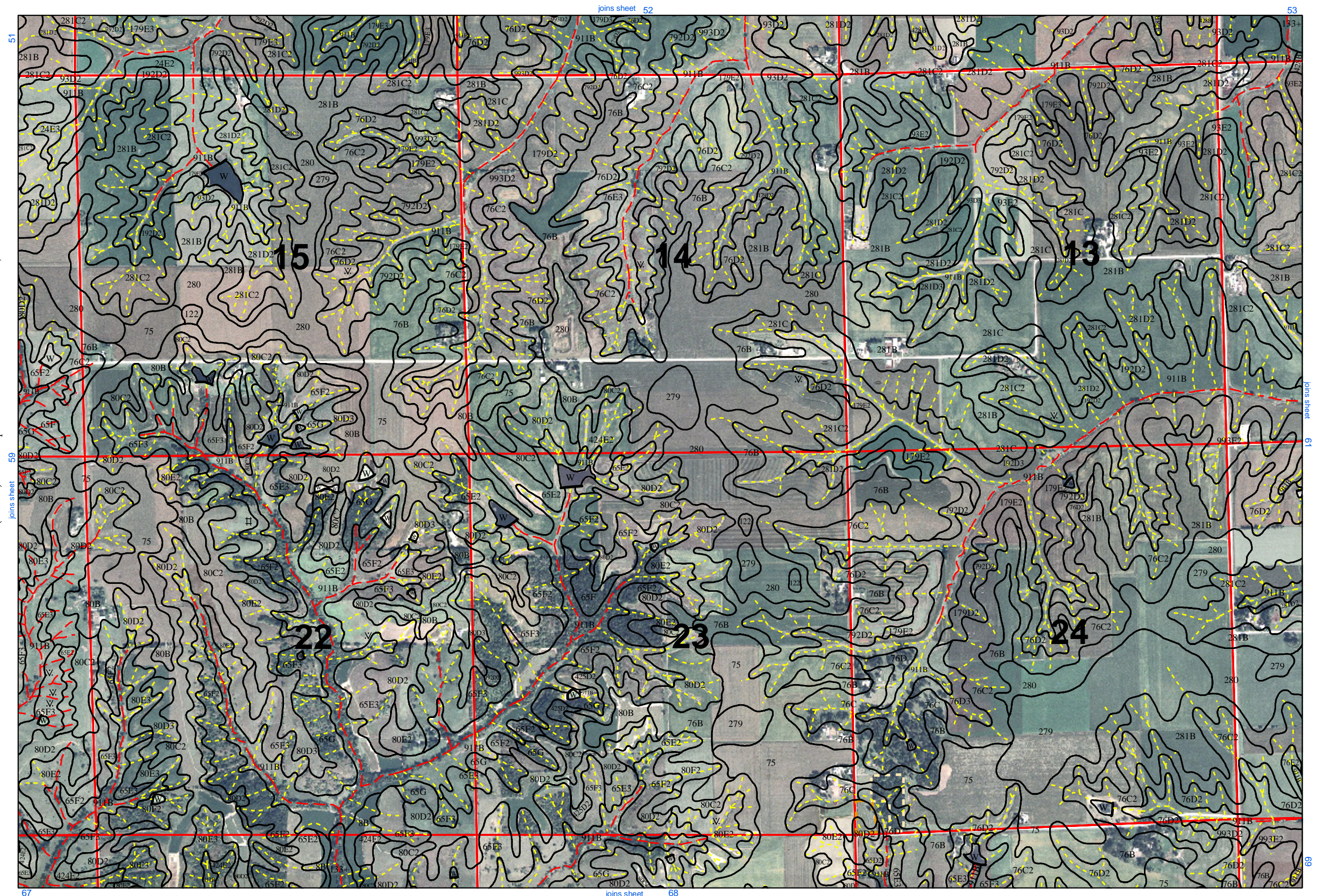
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



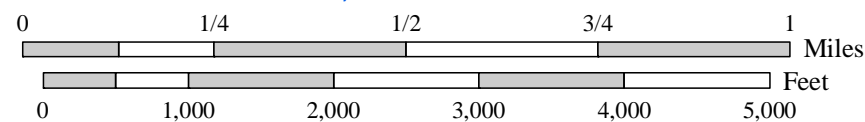
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



60



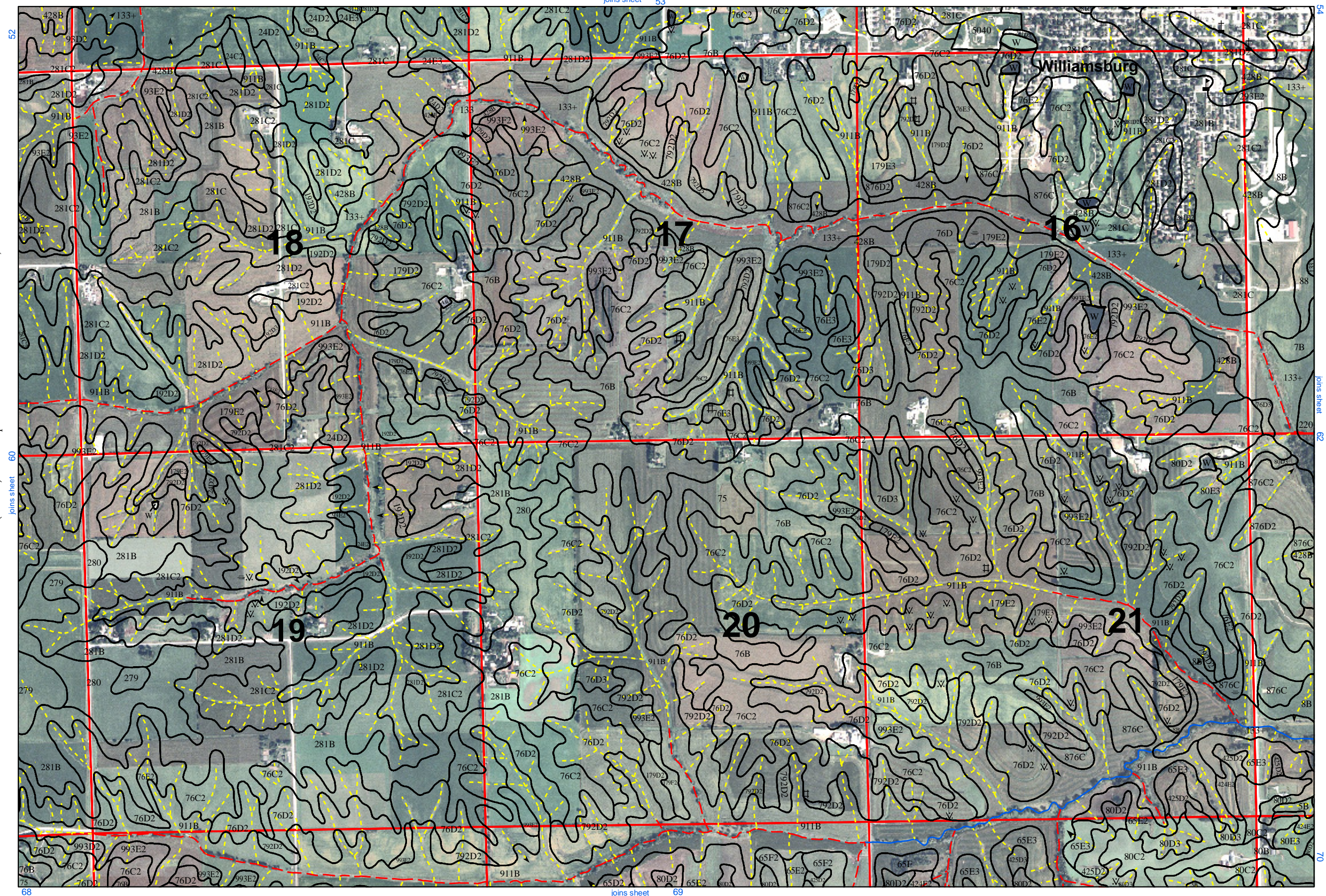
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



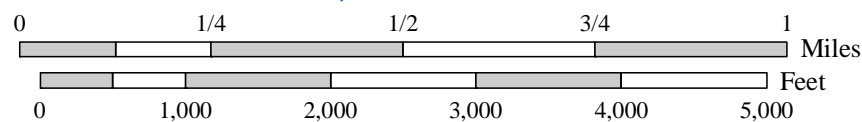
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



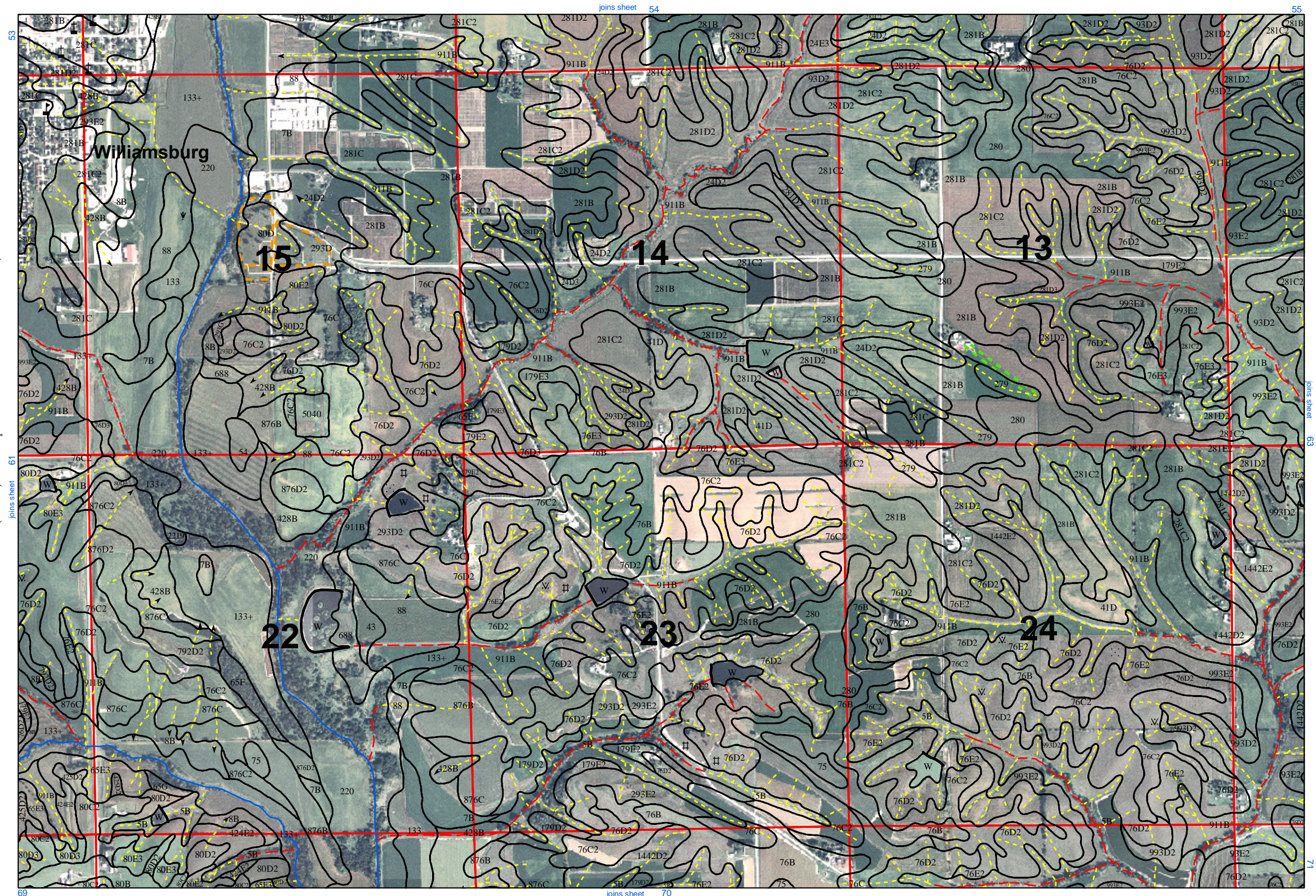
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



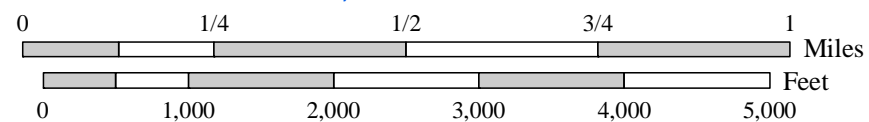
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.

62



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



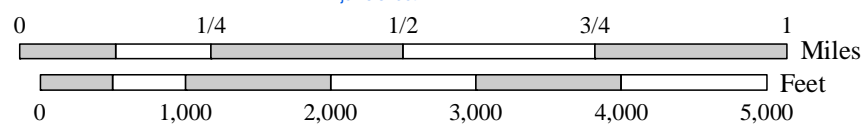
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

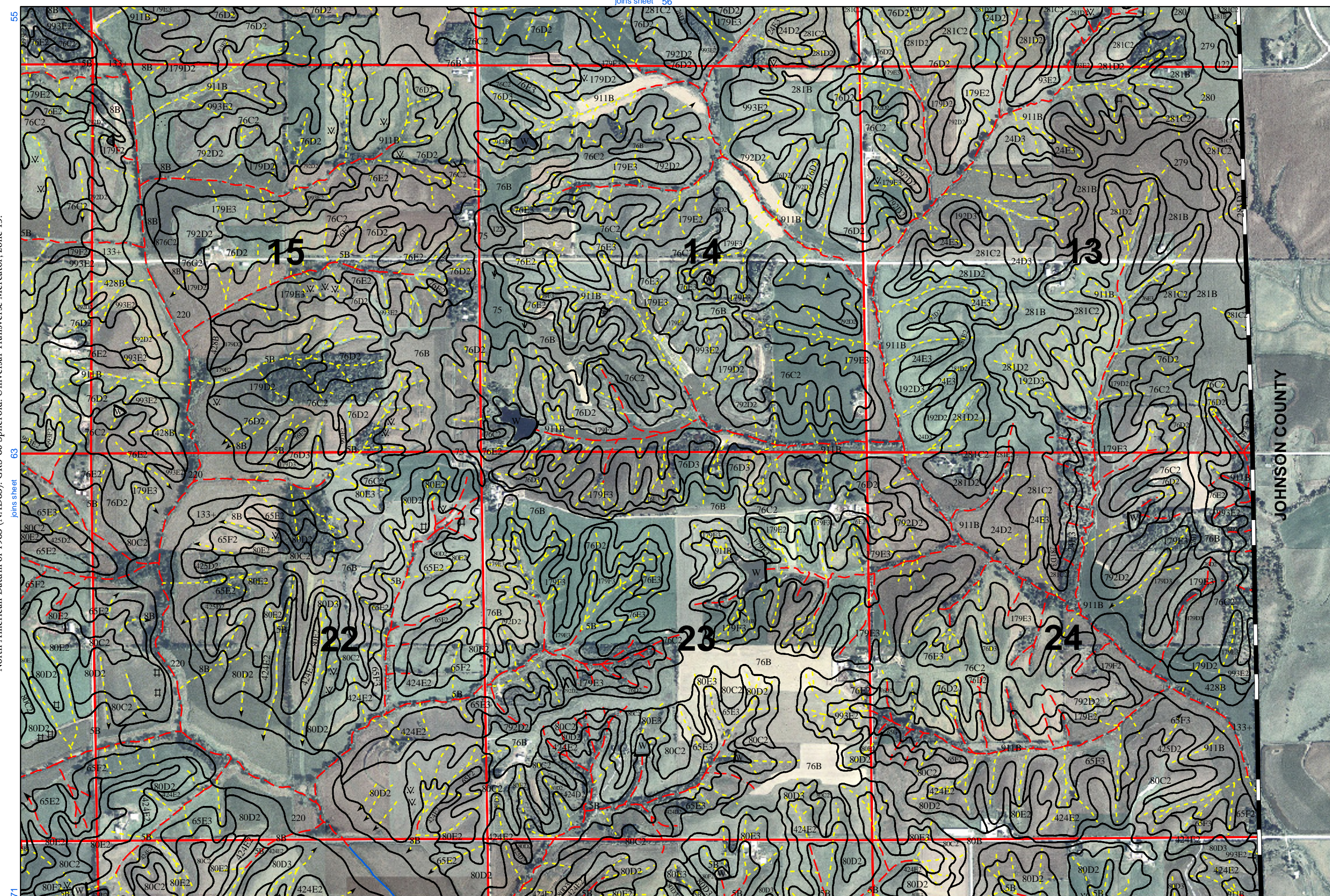


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

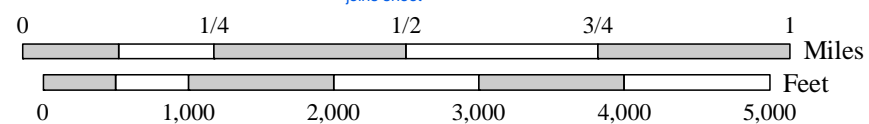


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



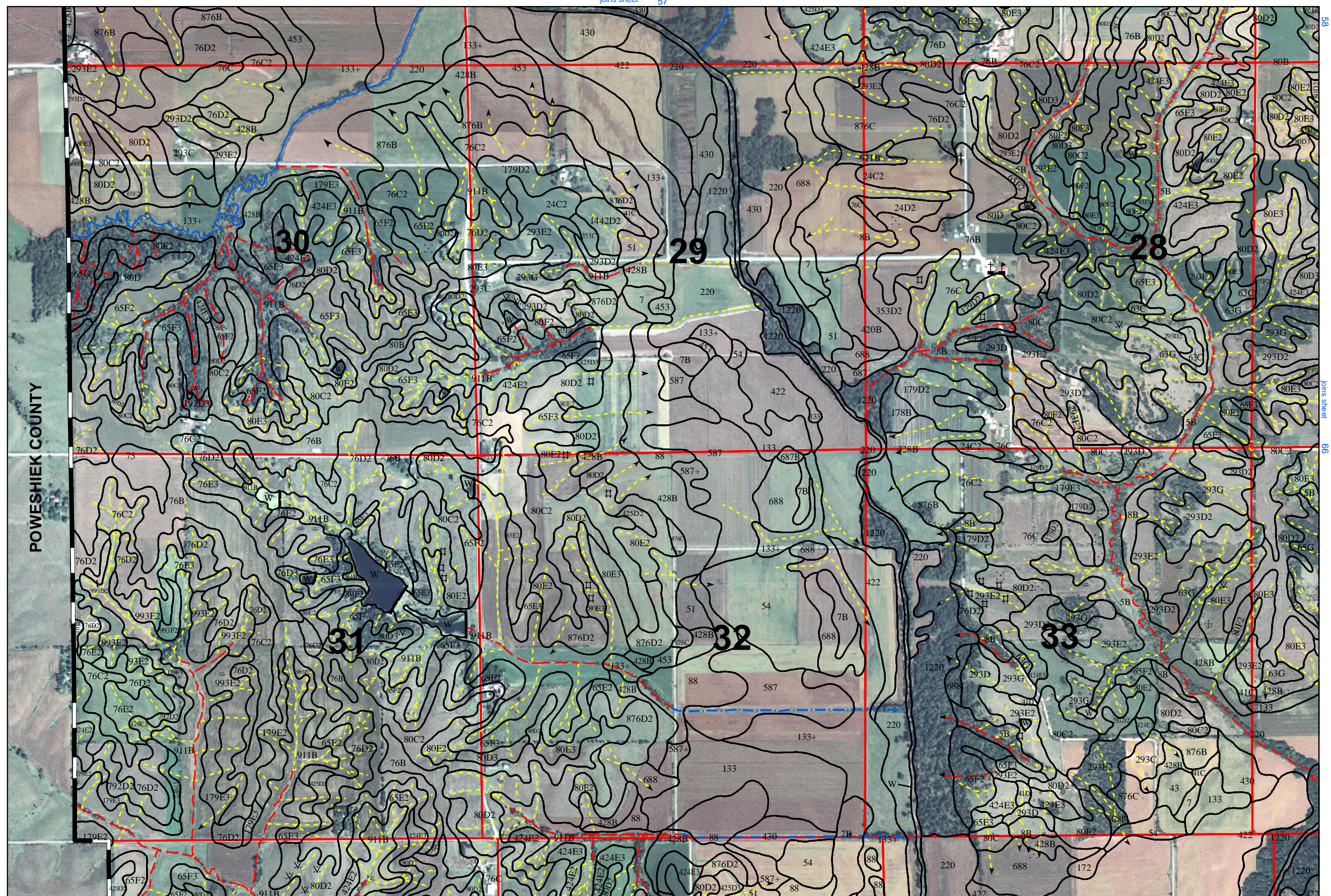
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



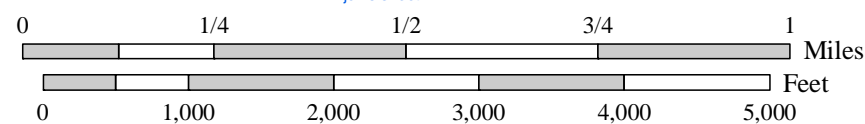
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

(e)



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



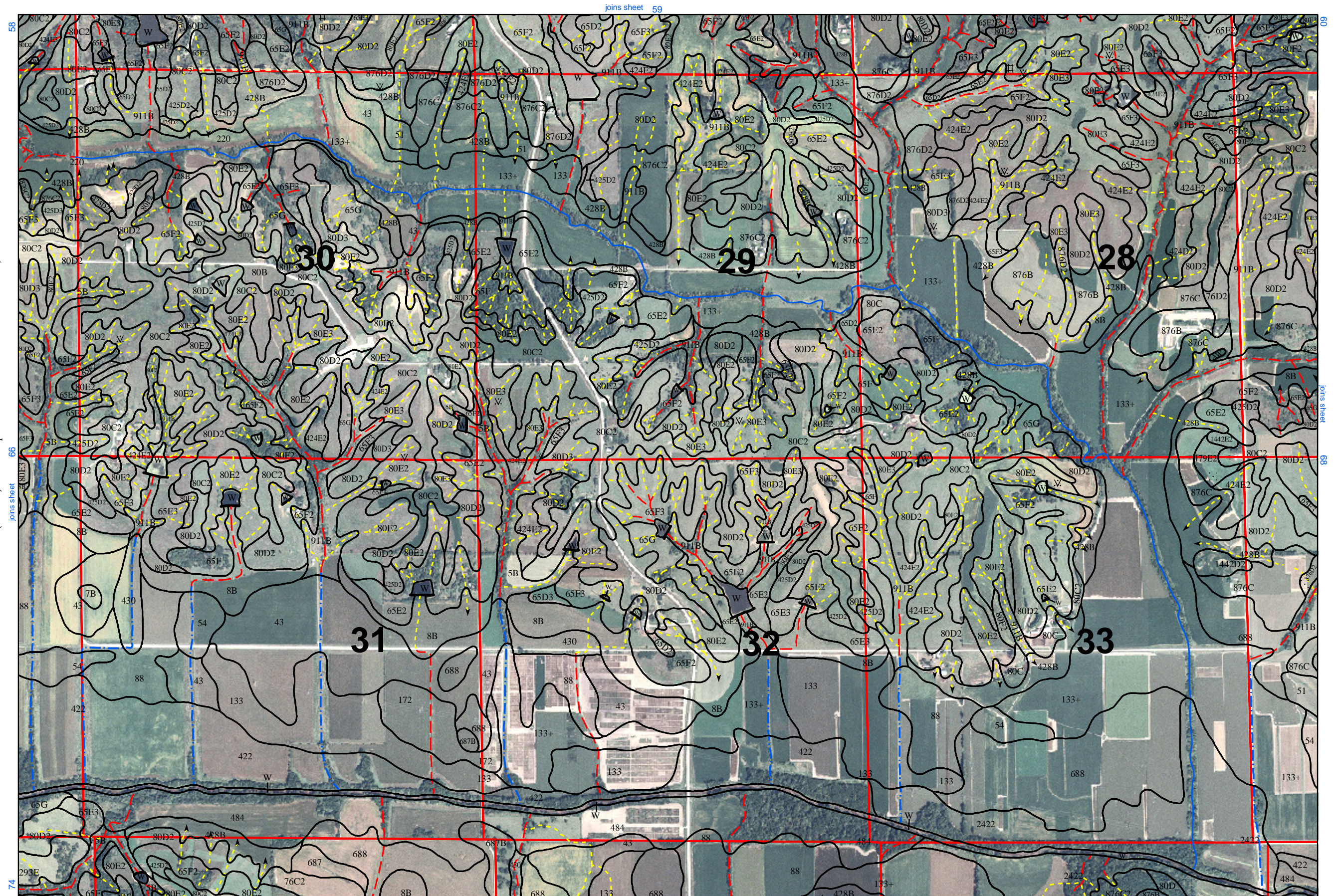
North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



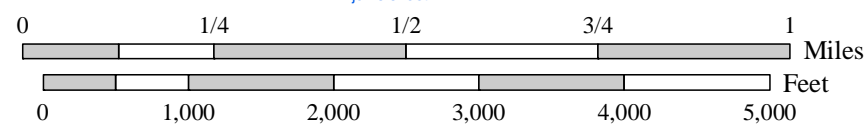
United States Department of Agriculture
 **NRCS** Natural Resources
 Conservation Service

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



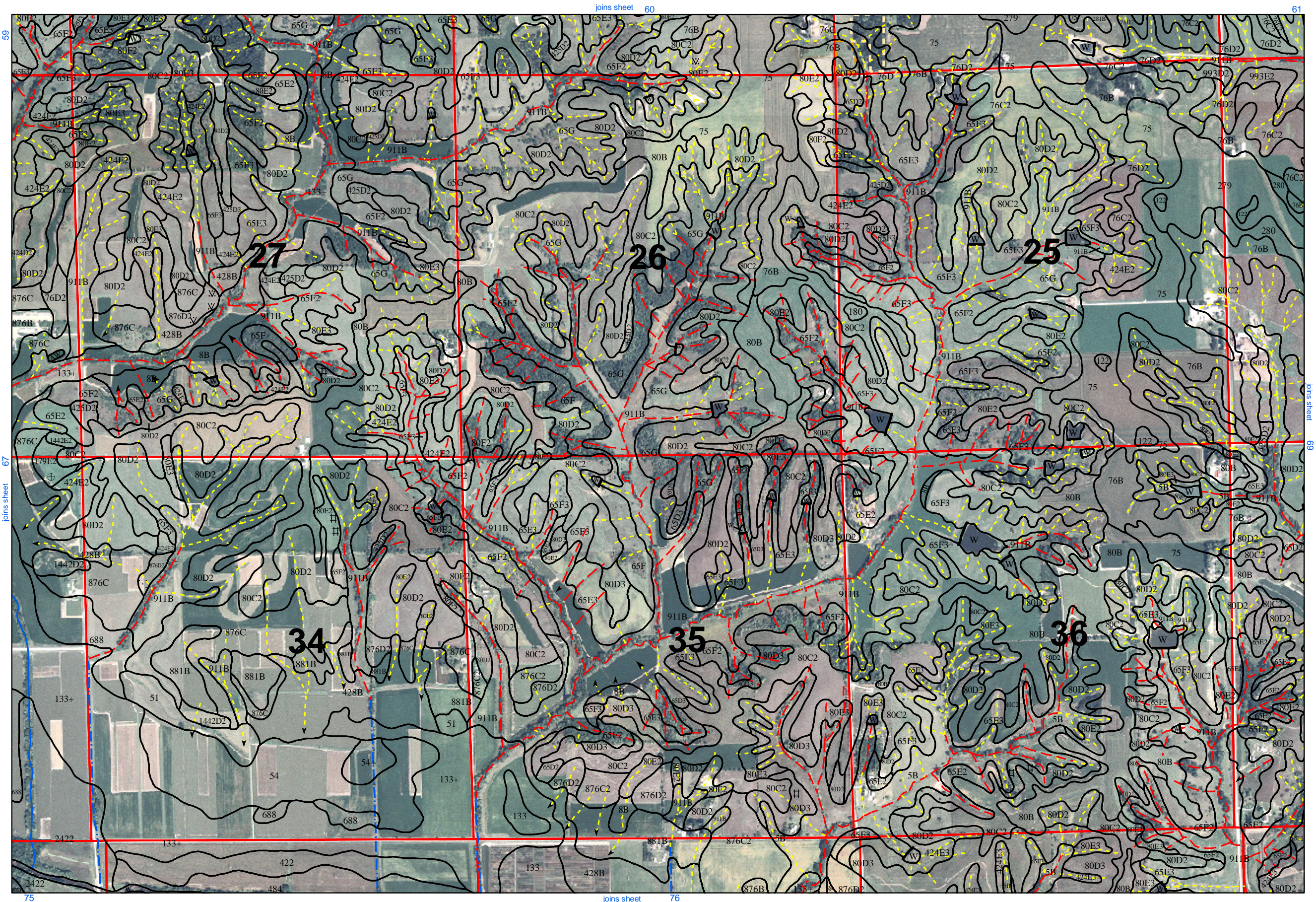
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



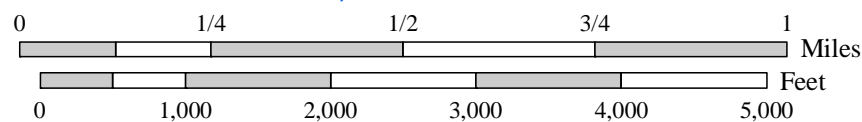
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

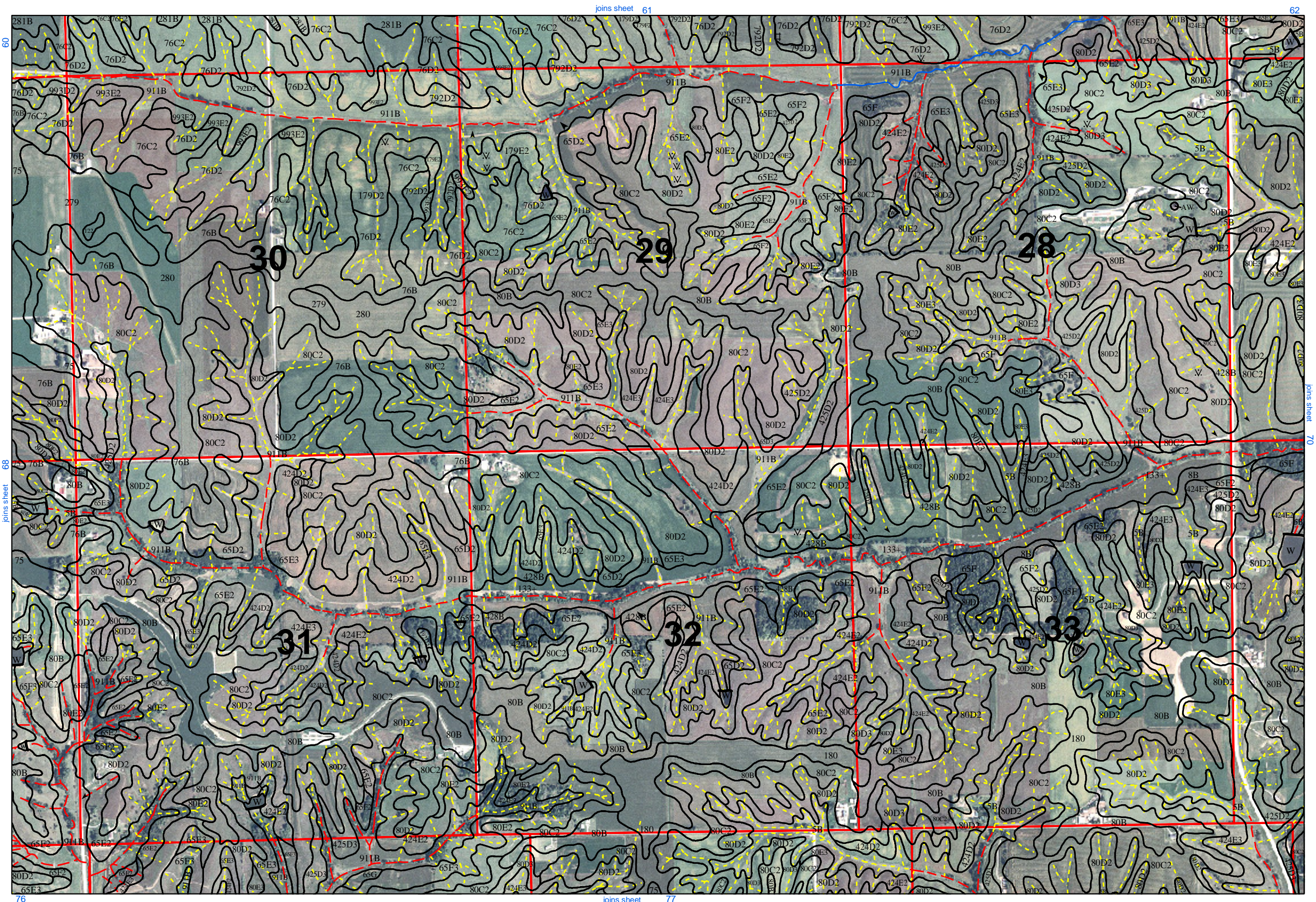


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

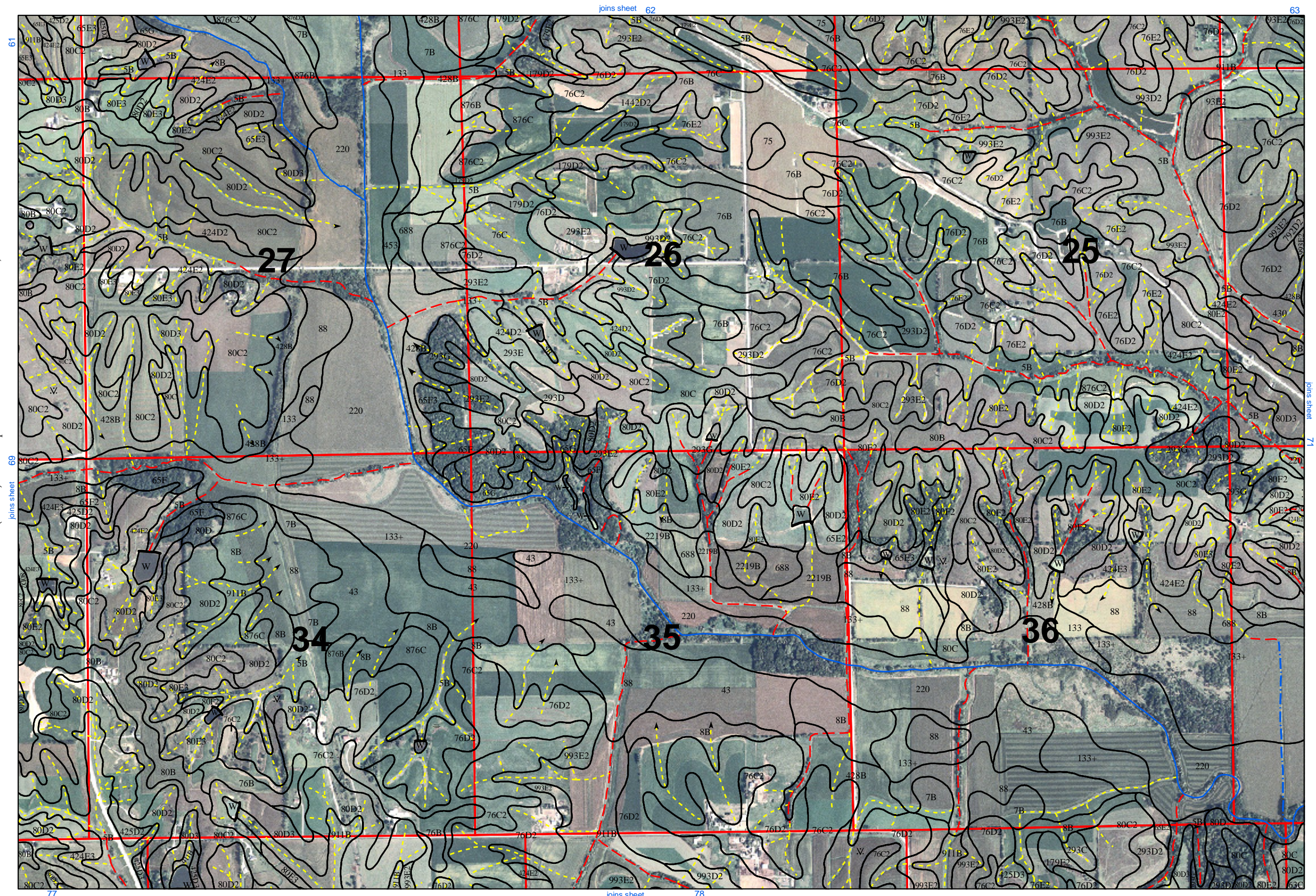
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



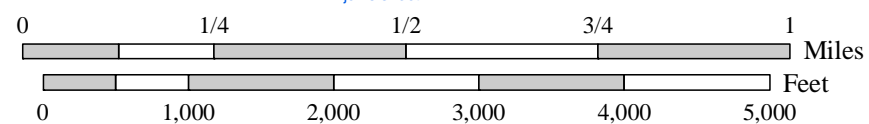
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

(70)



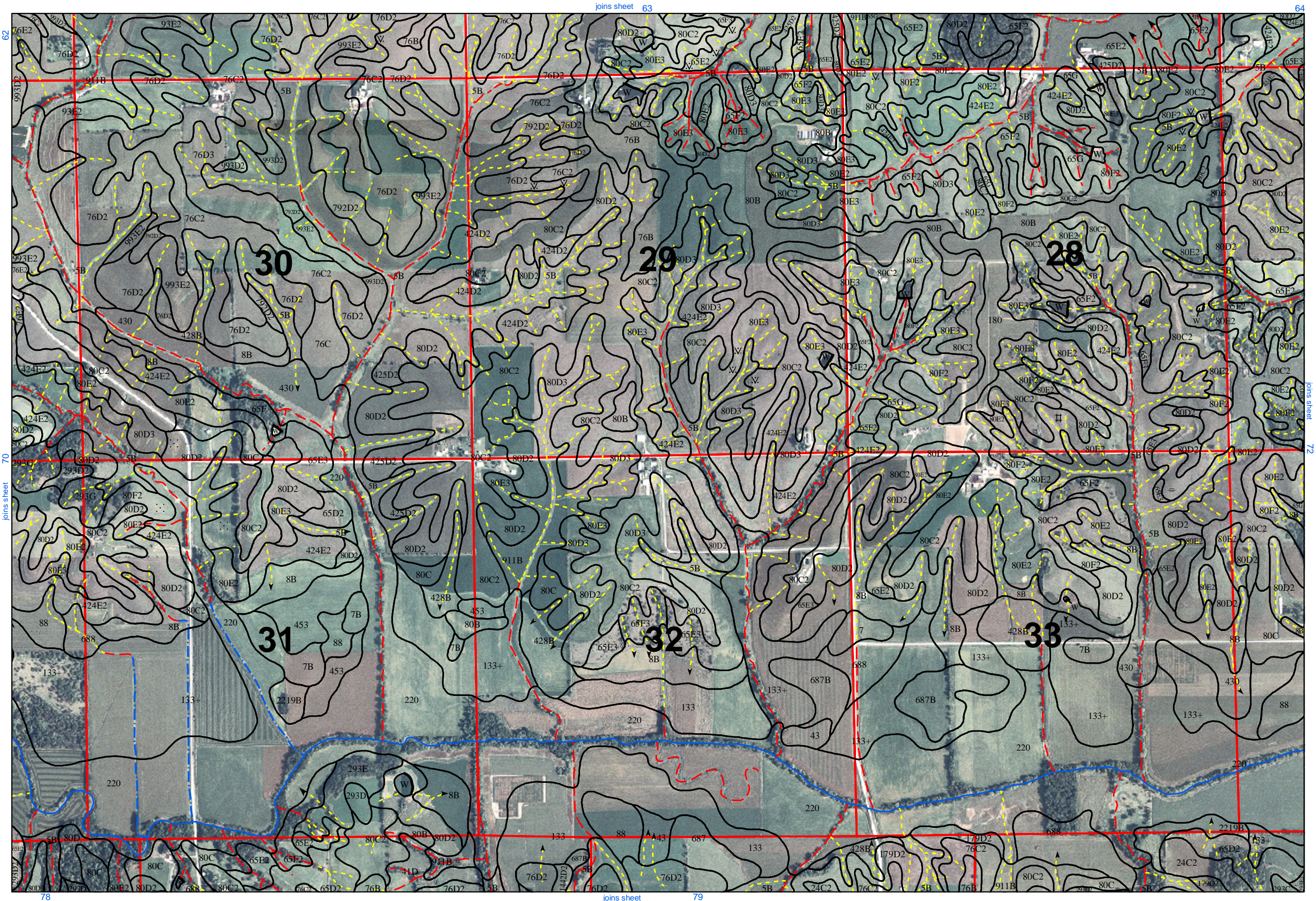
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



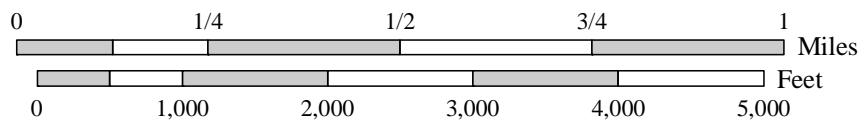
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

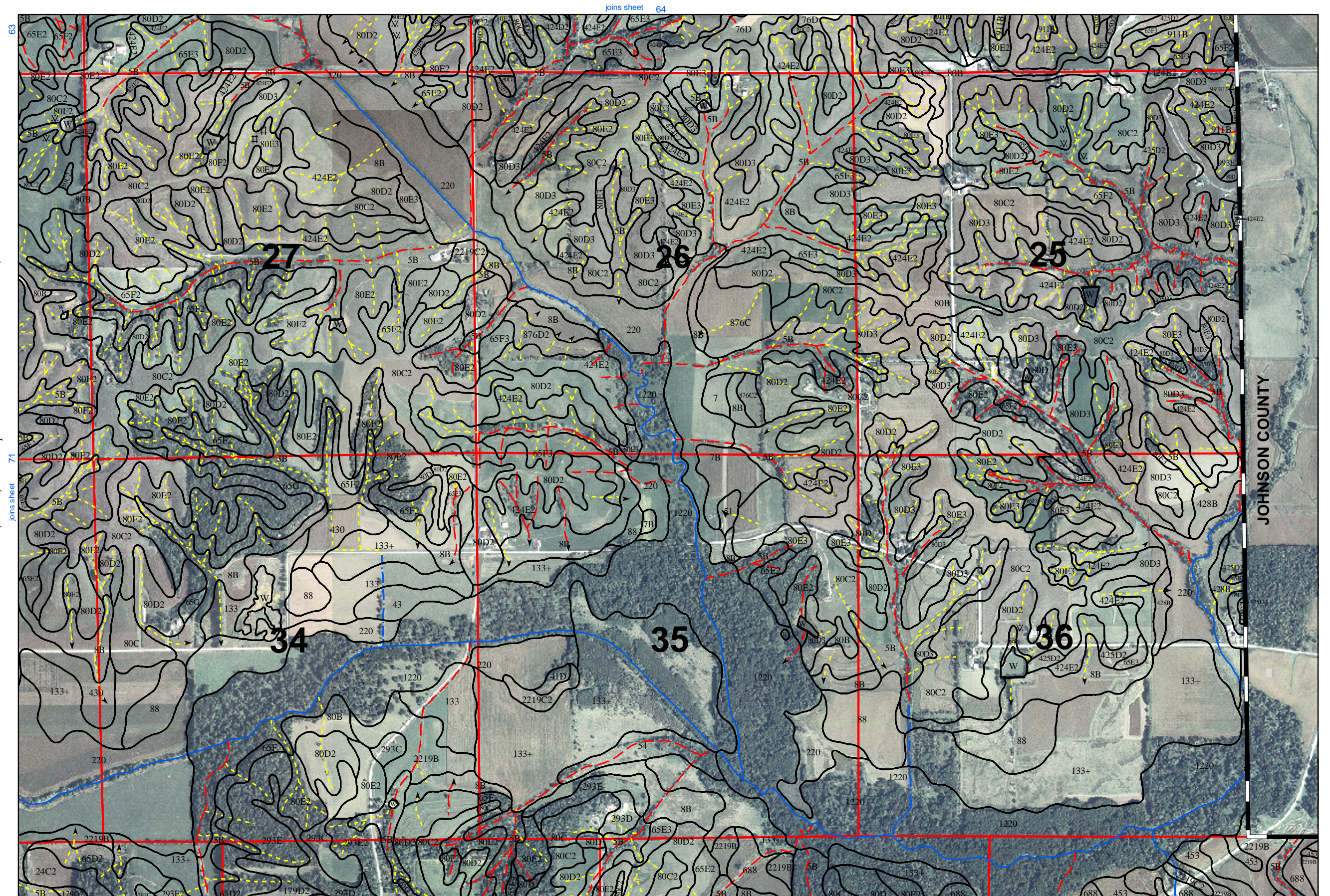


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



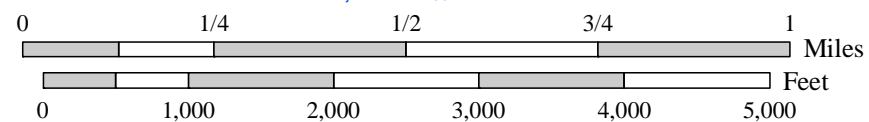
This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



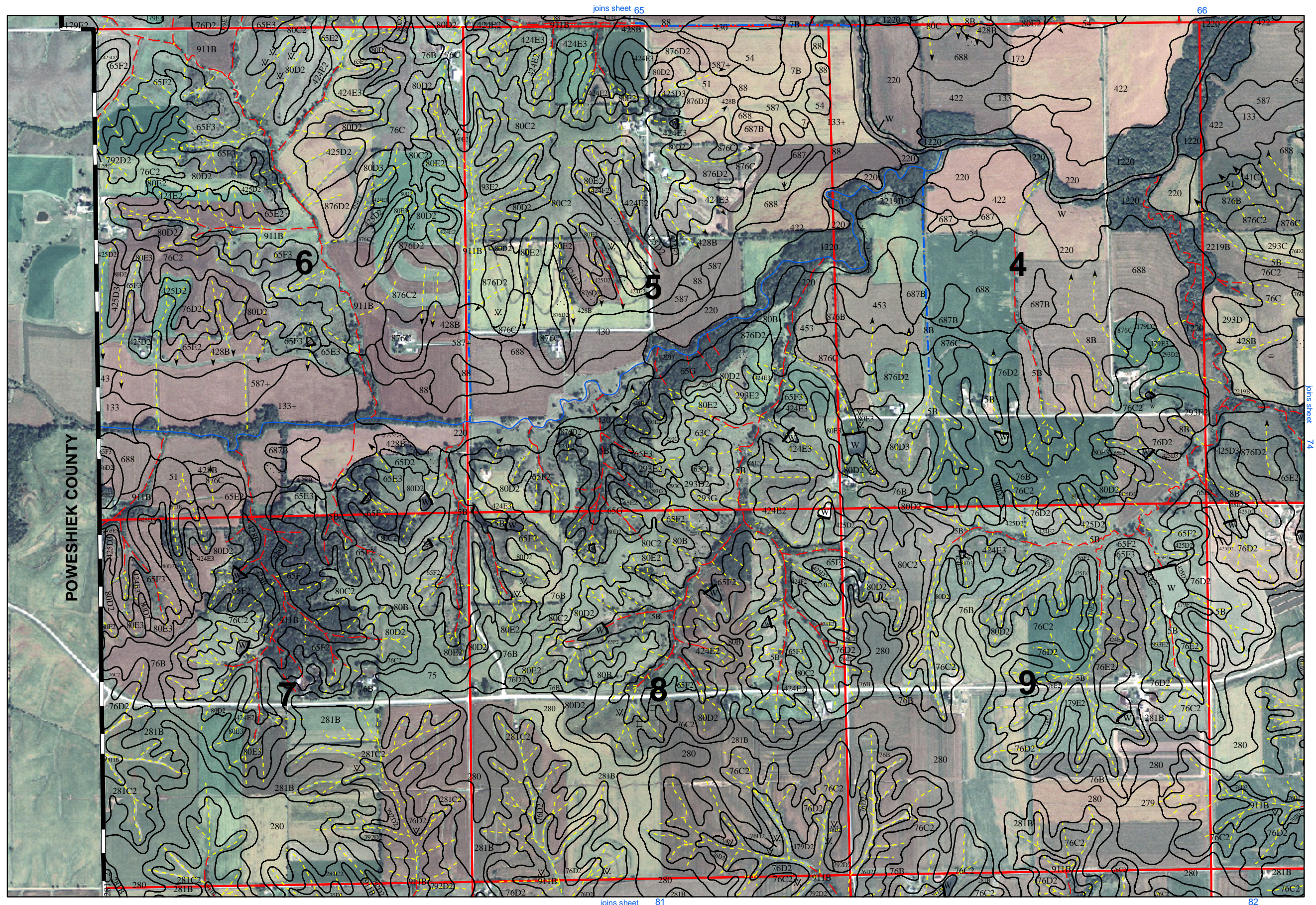
79

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

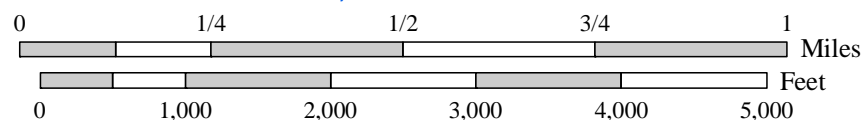


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



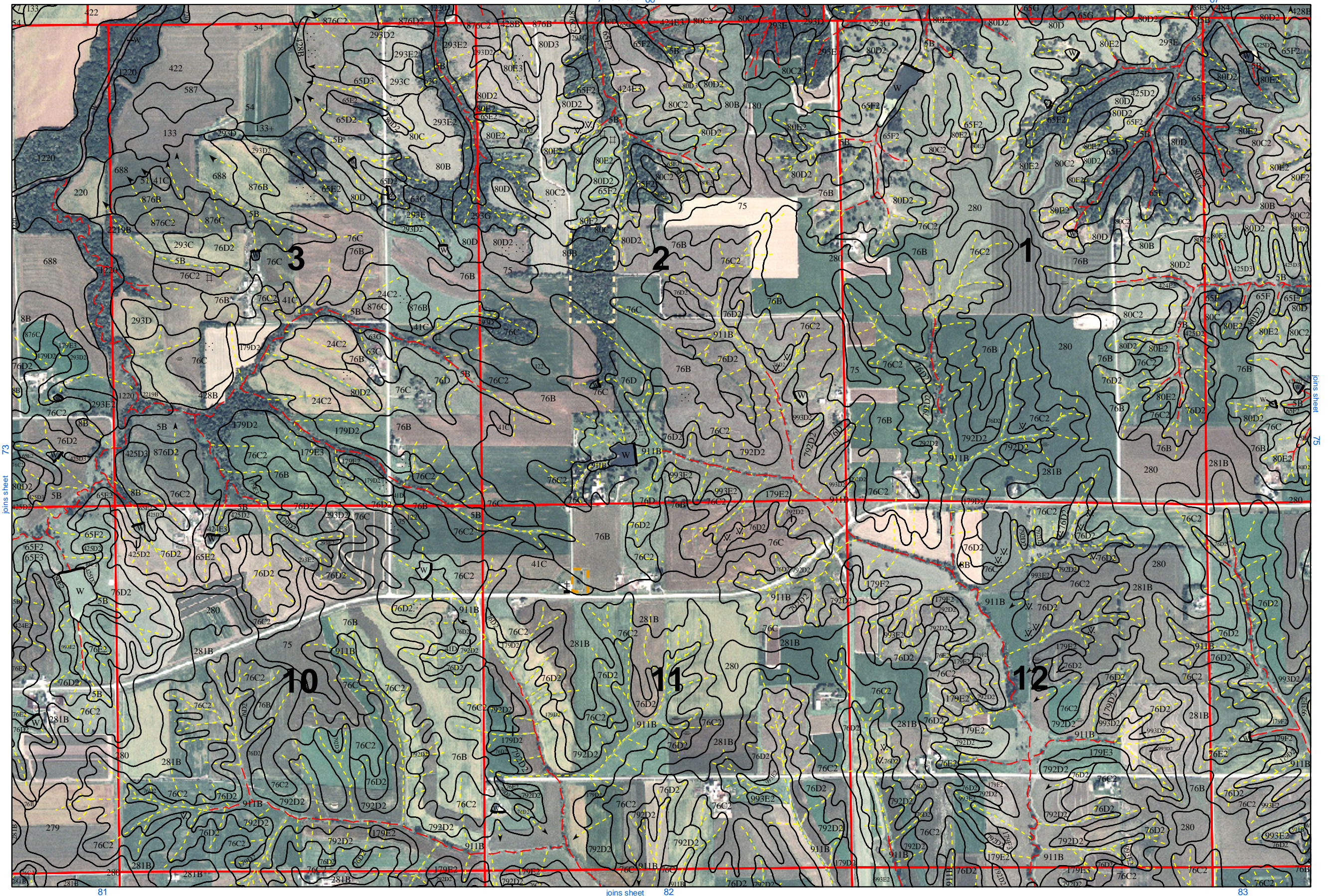
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



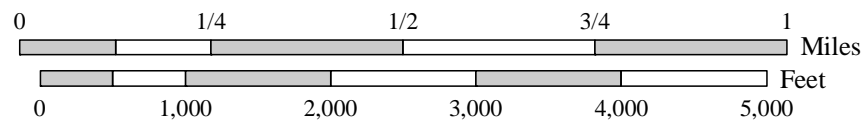
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

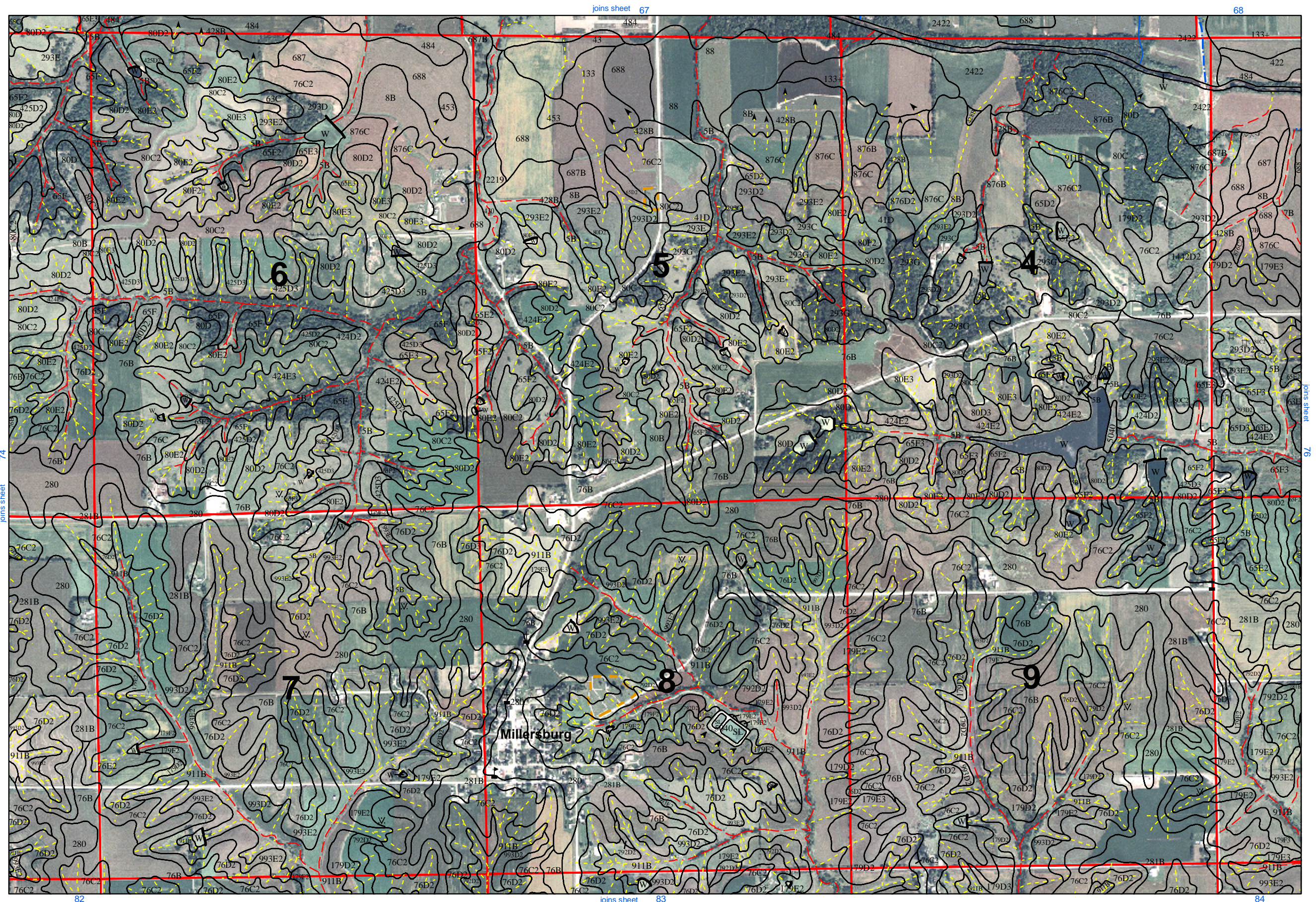


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

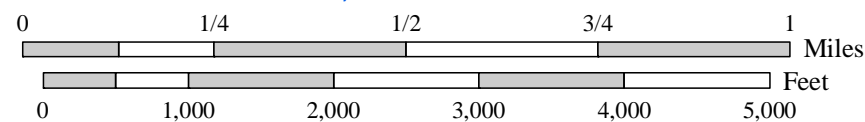


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



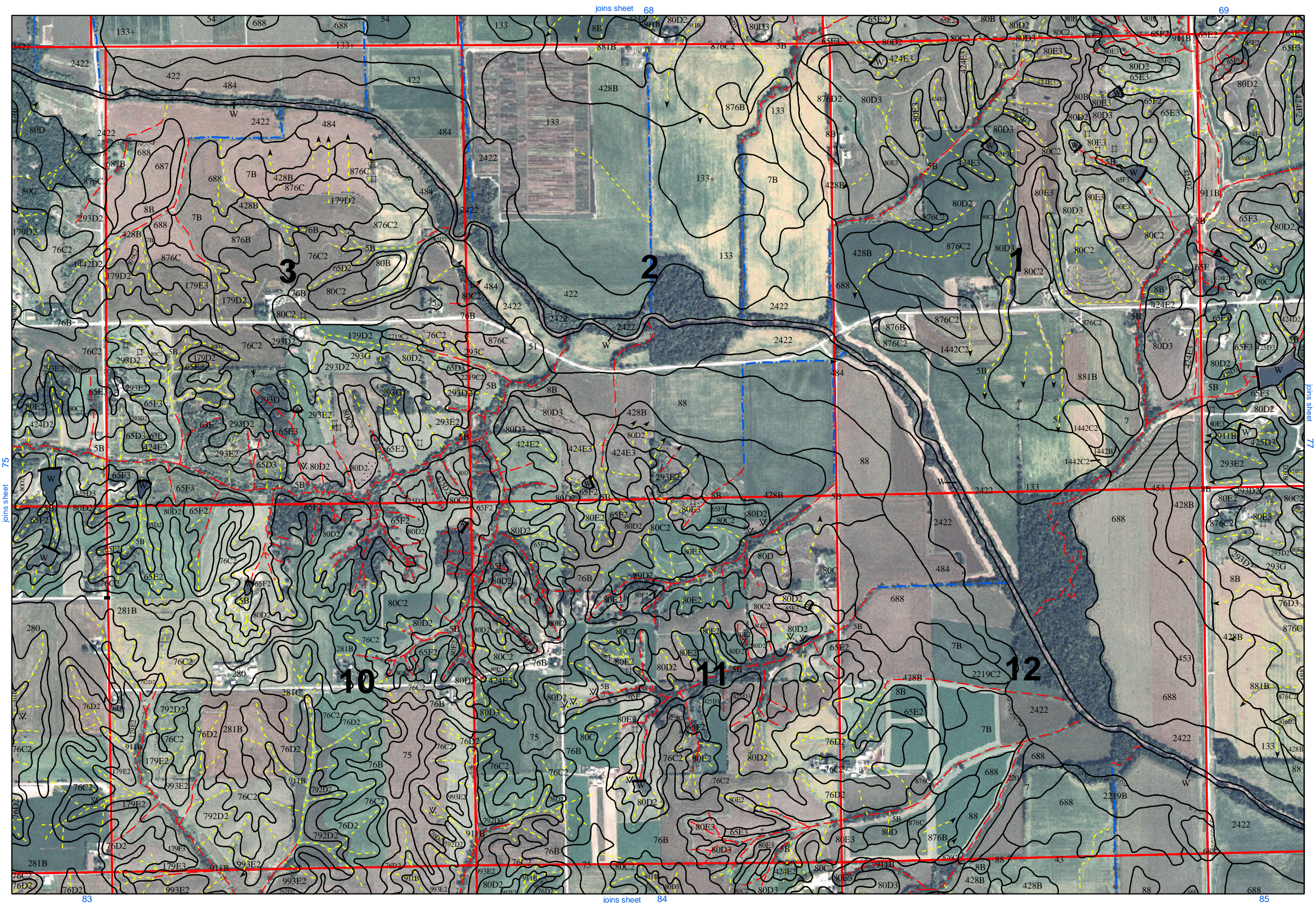
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



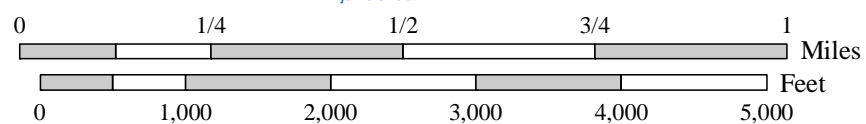
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



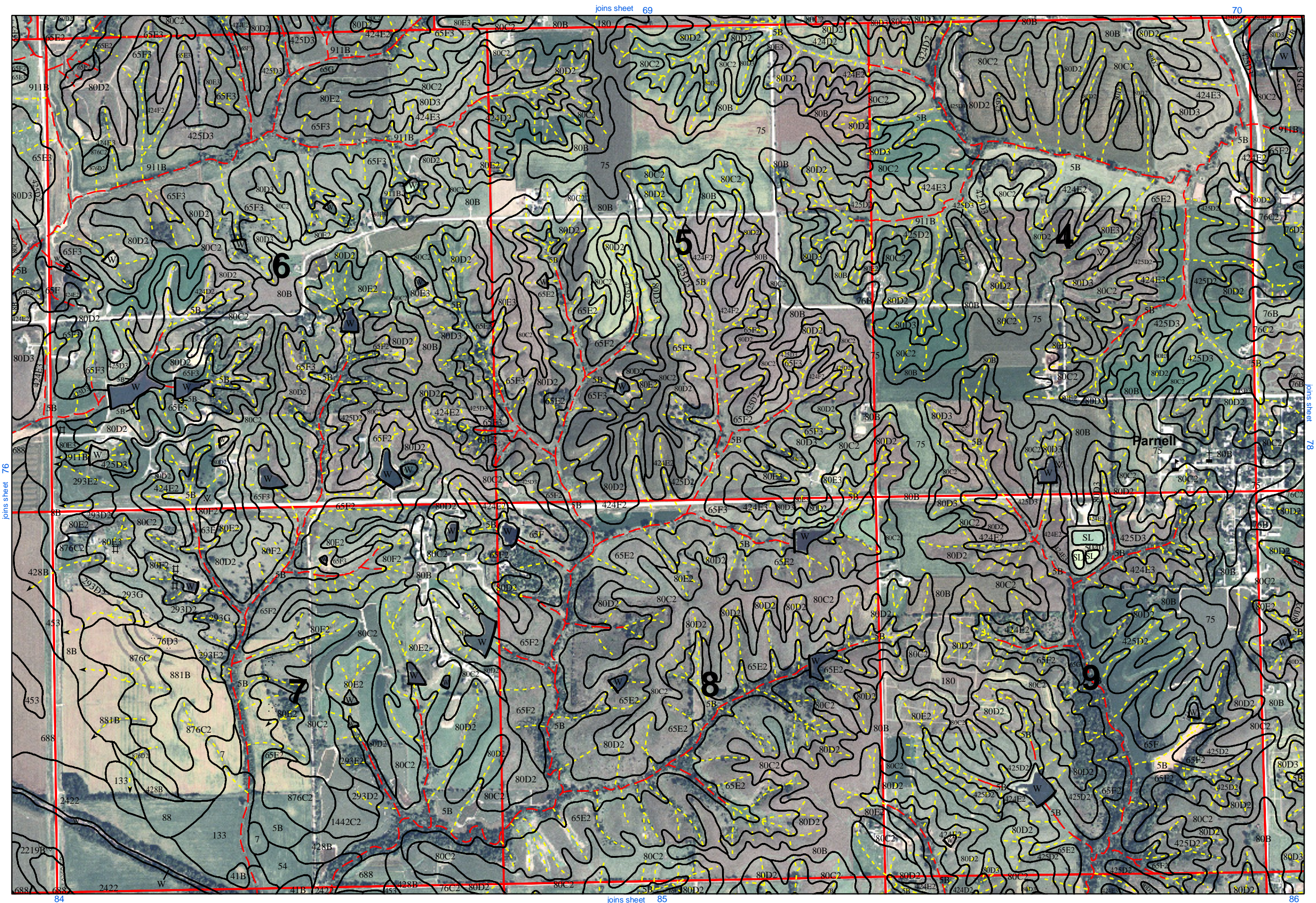
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



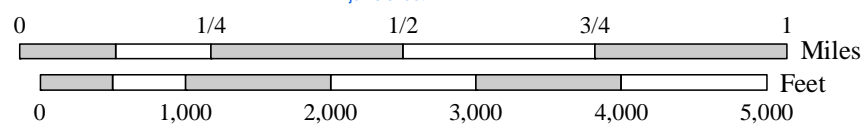
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

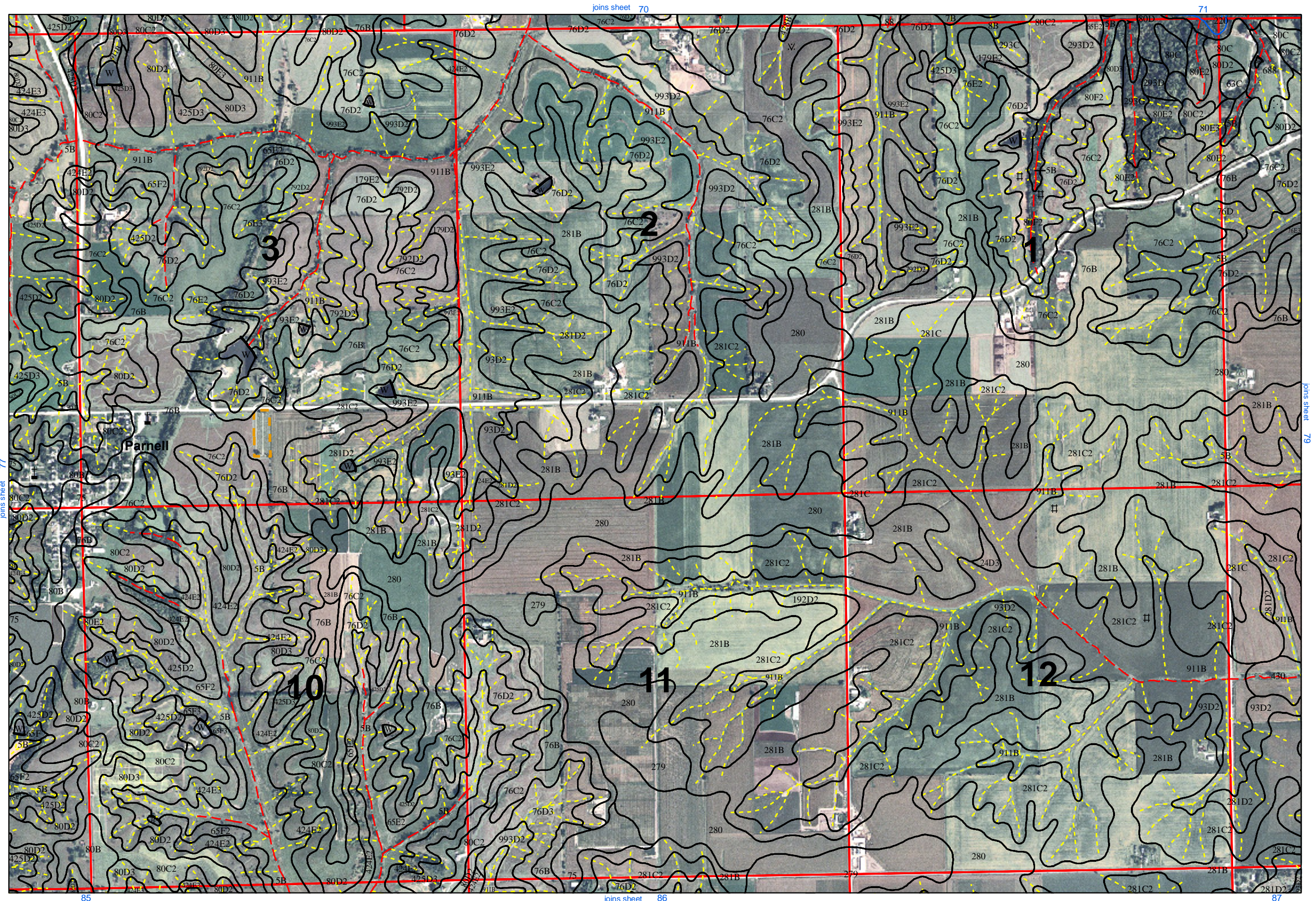


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

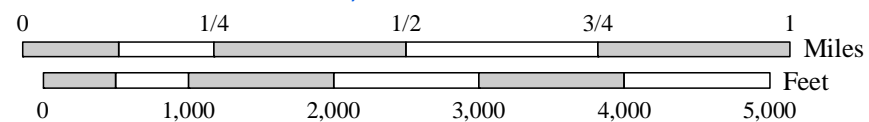


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



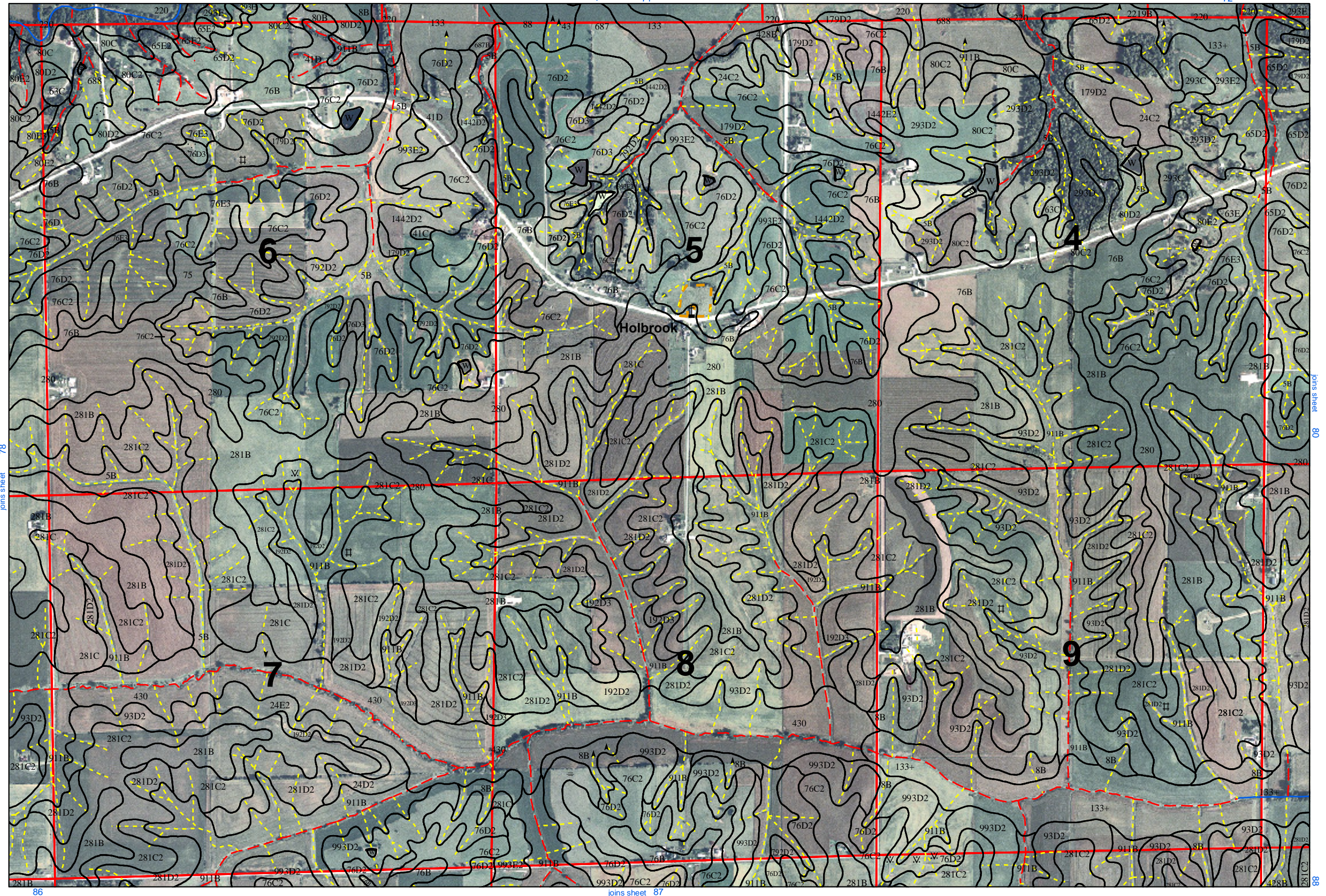
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



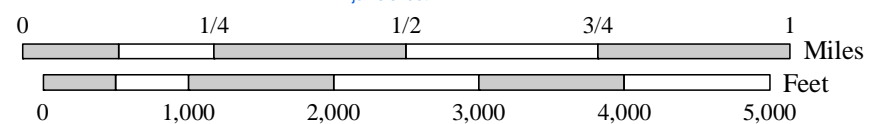
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



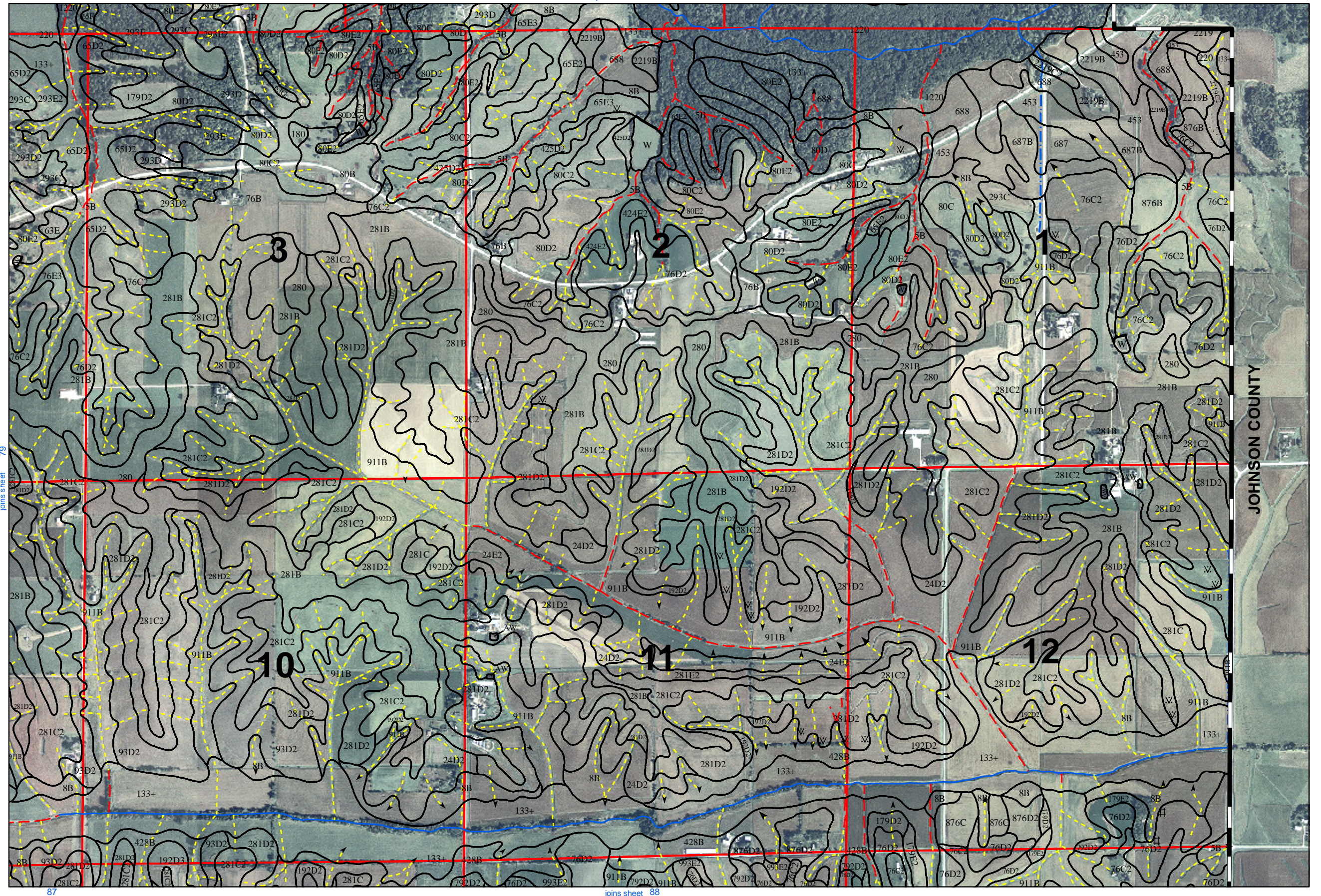
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



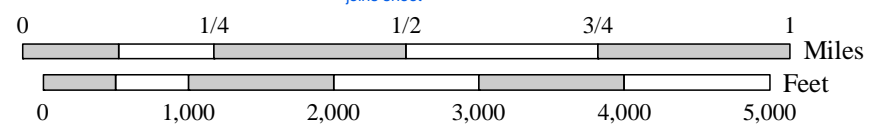
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



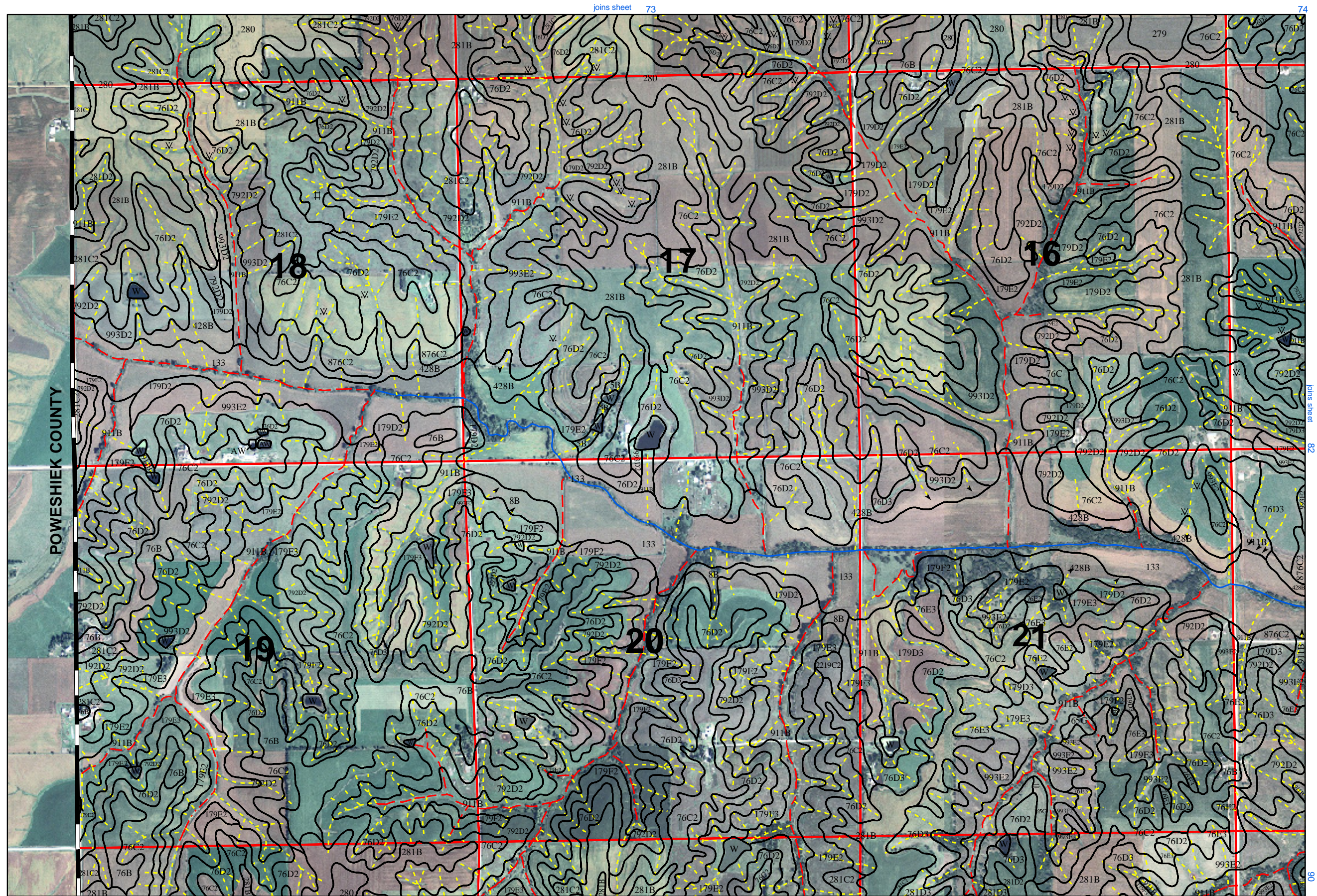
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



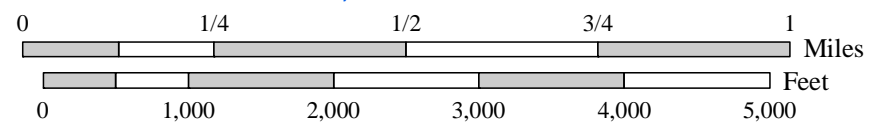
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



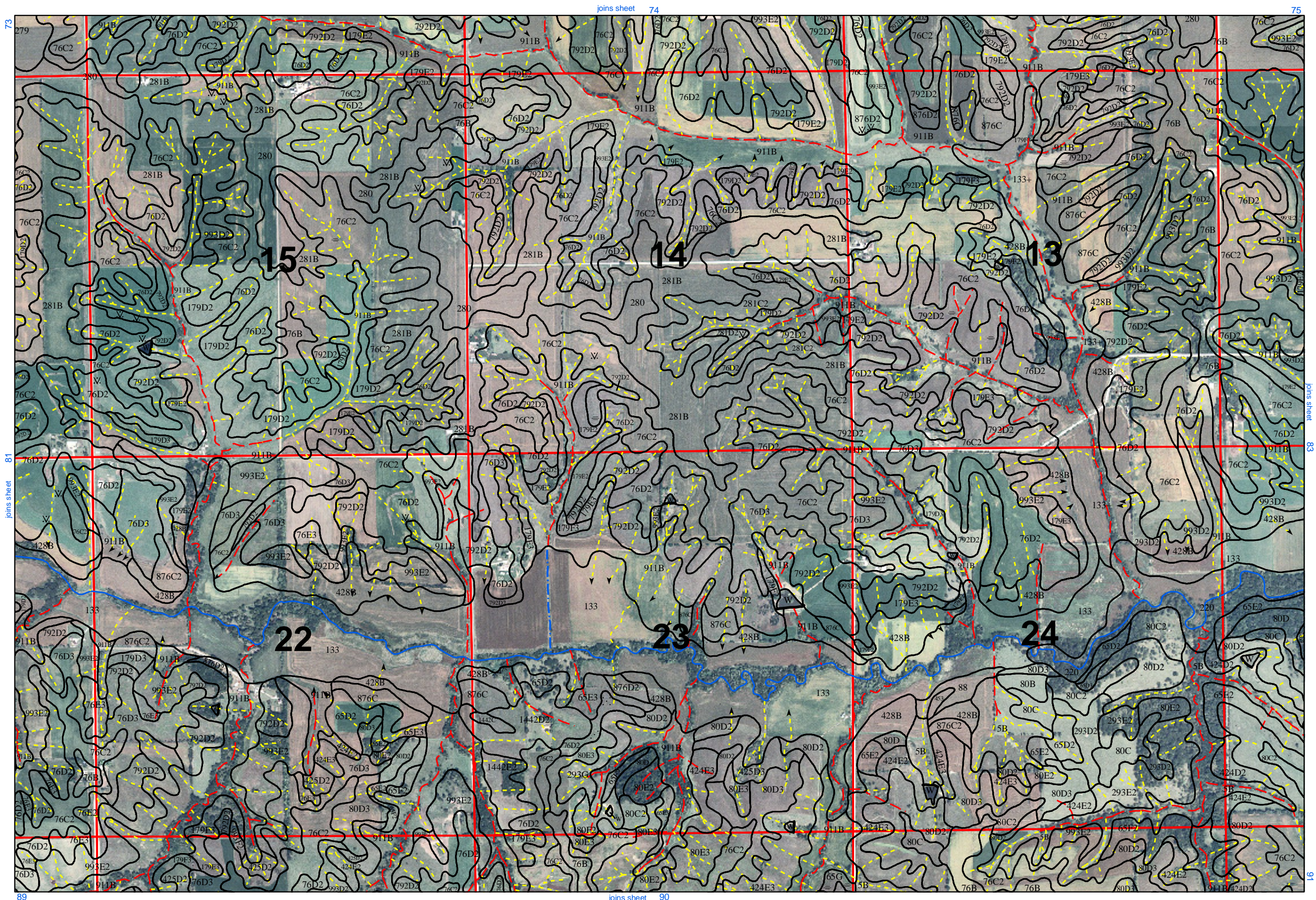
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



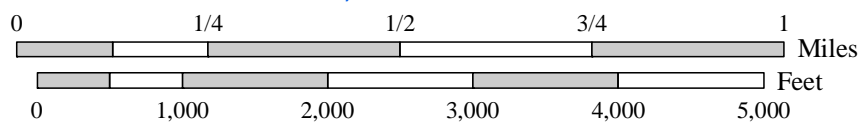
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

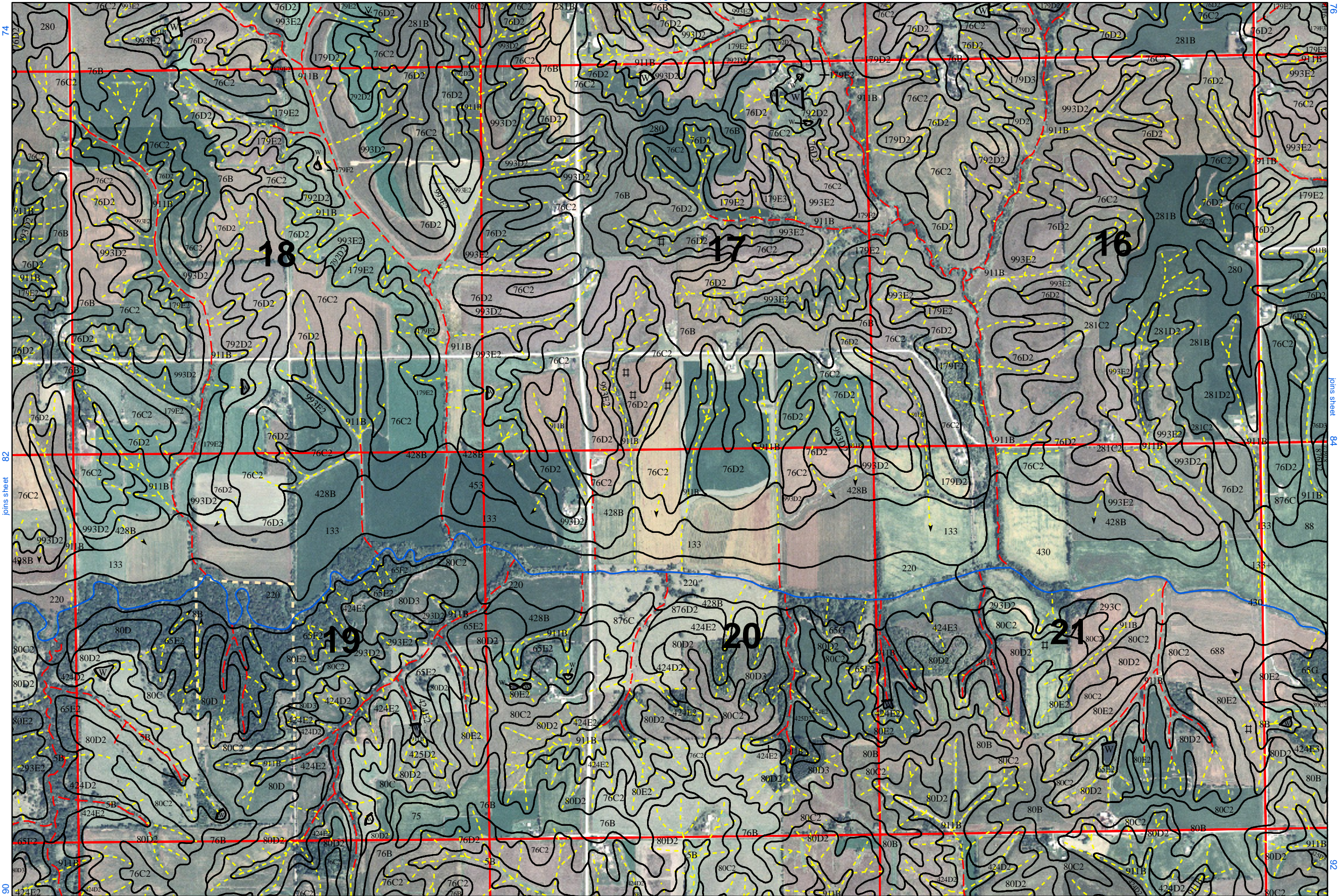


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

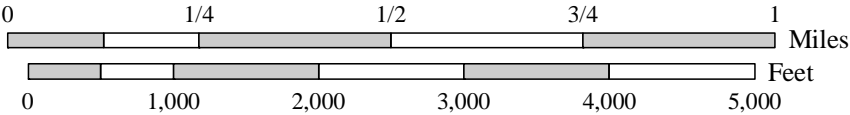


Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



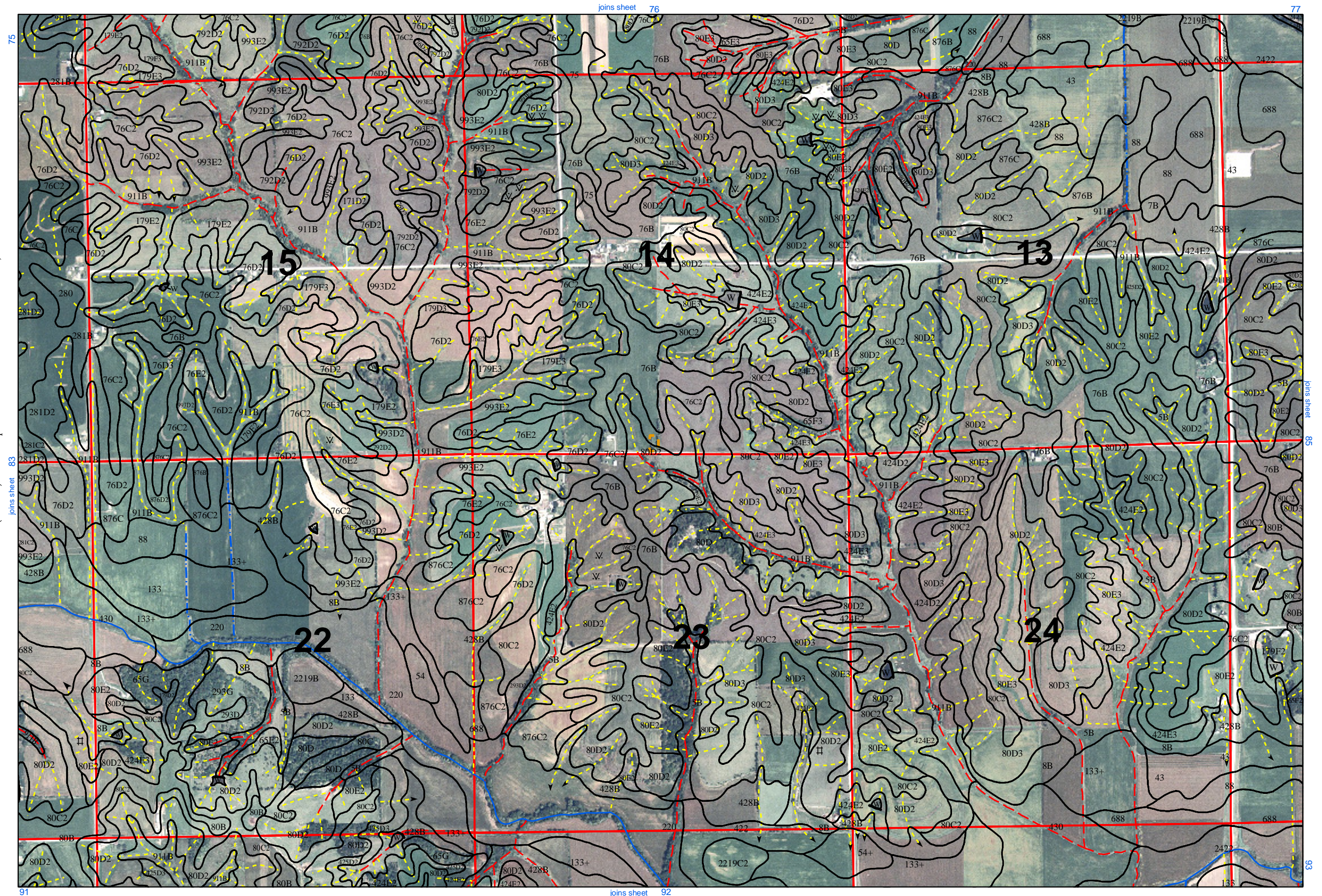
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



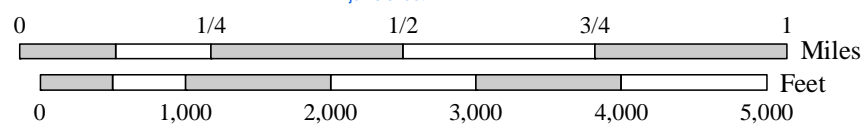
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



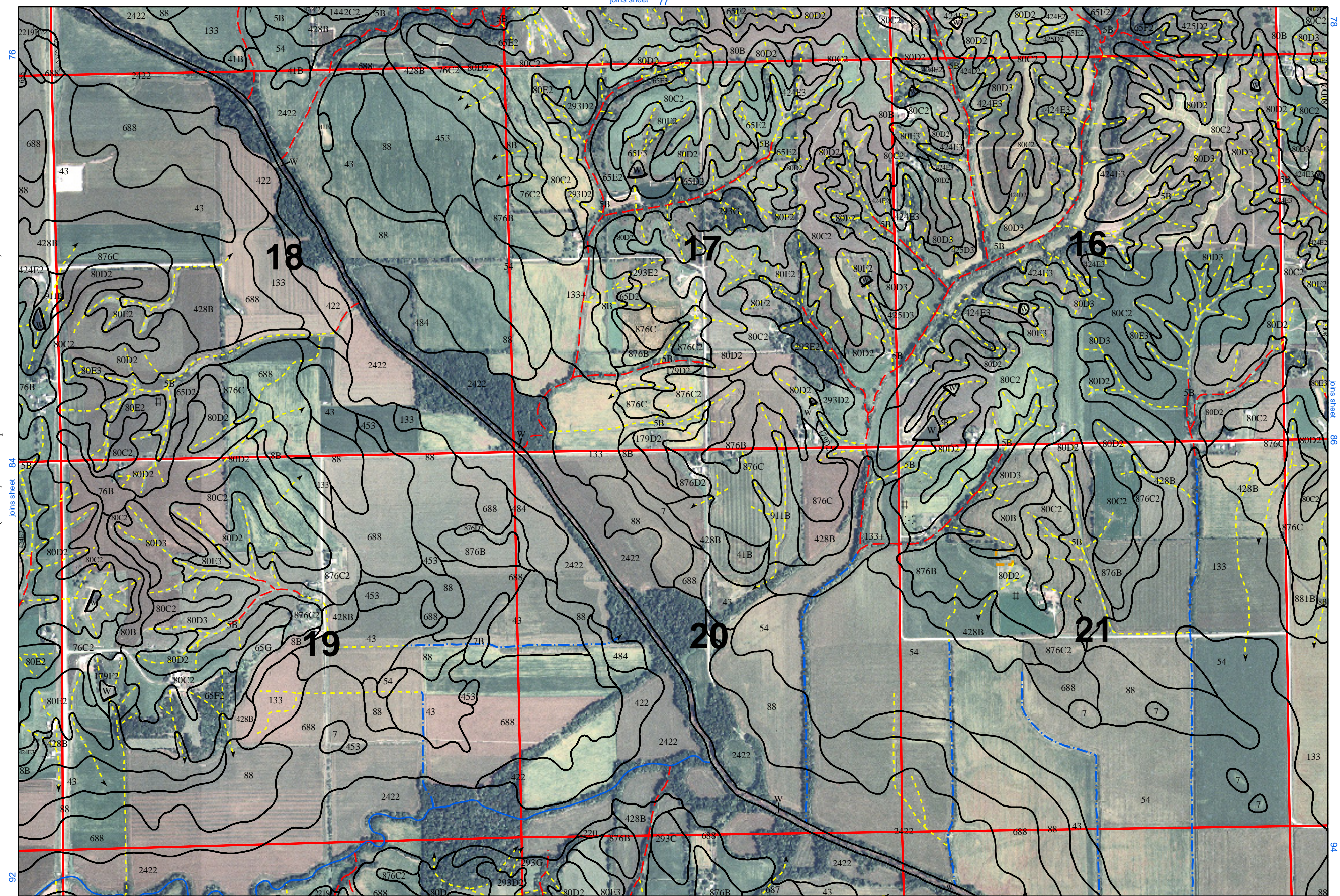
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



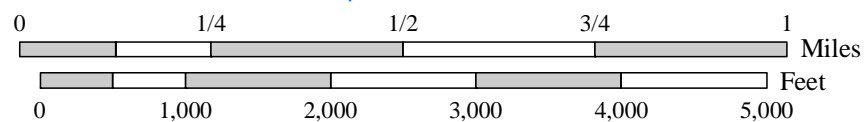
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



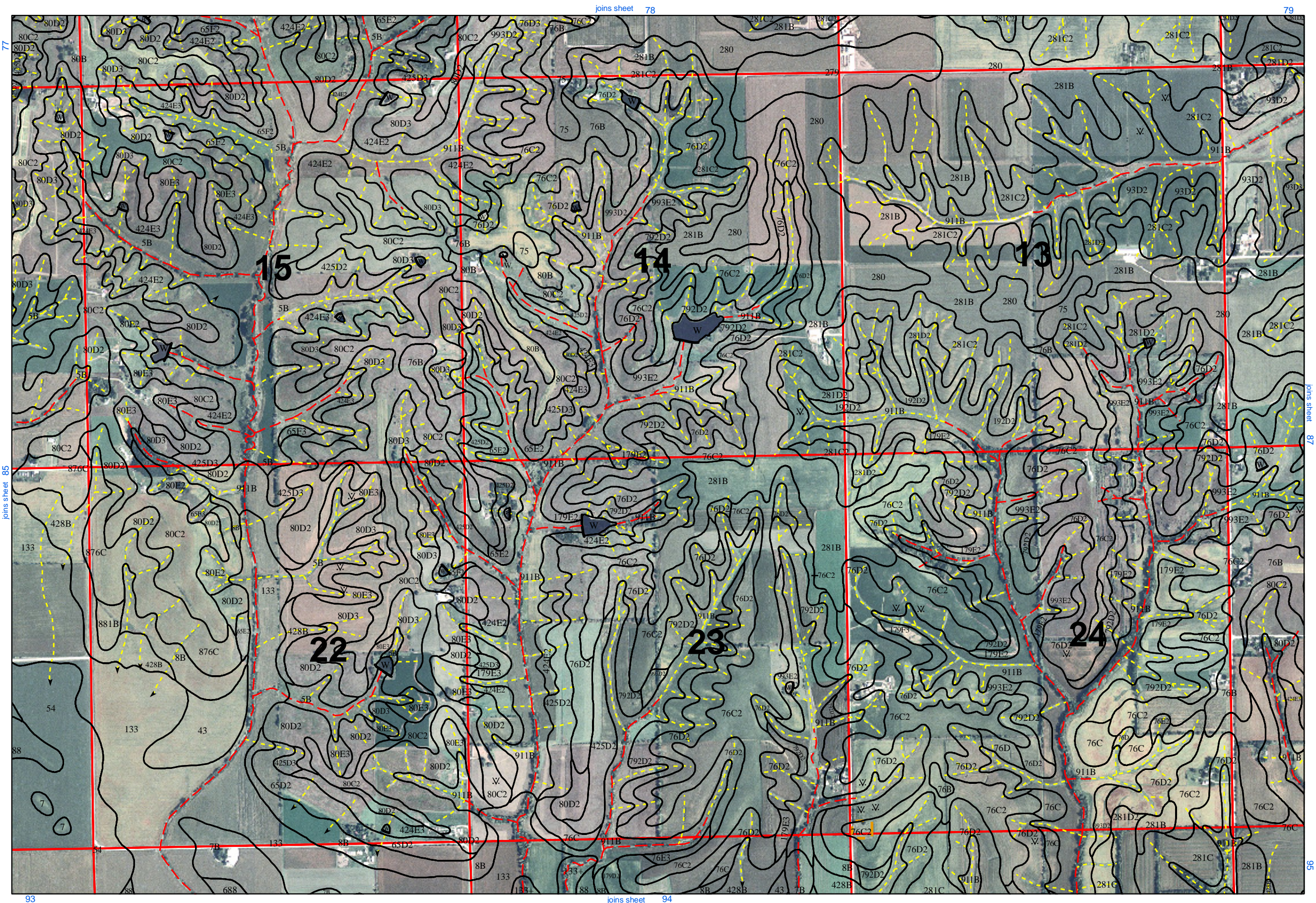
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



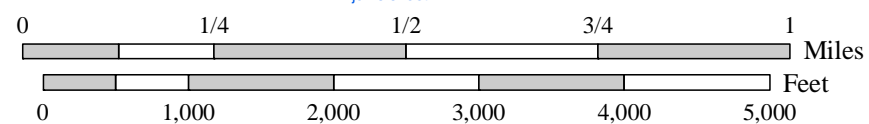
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

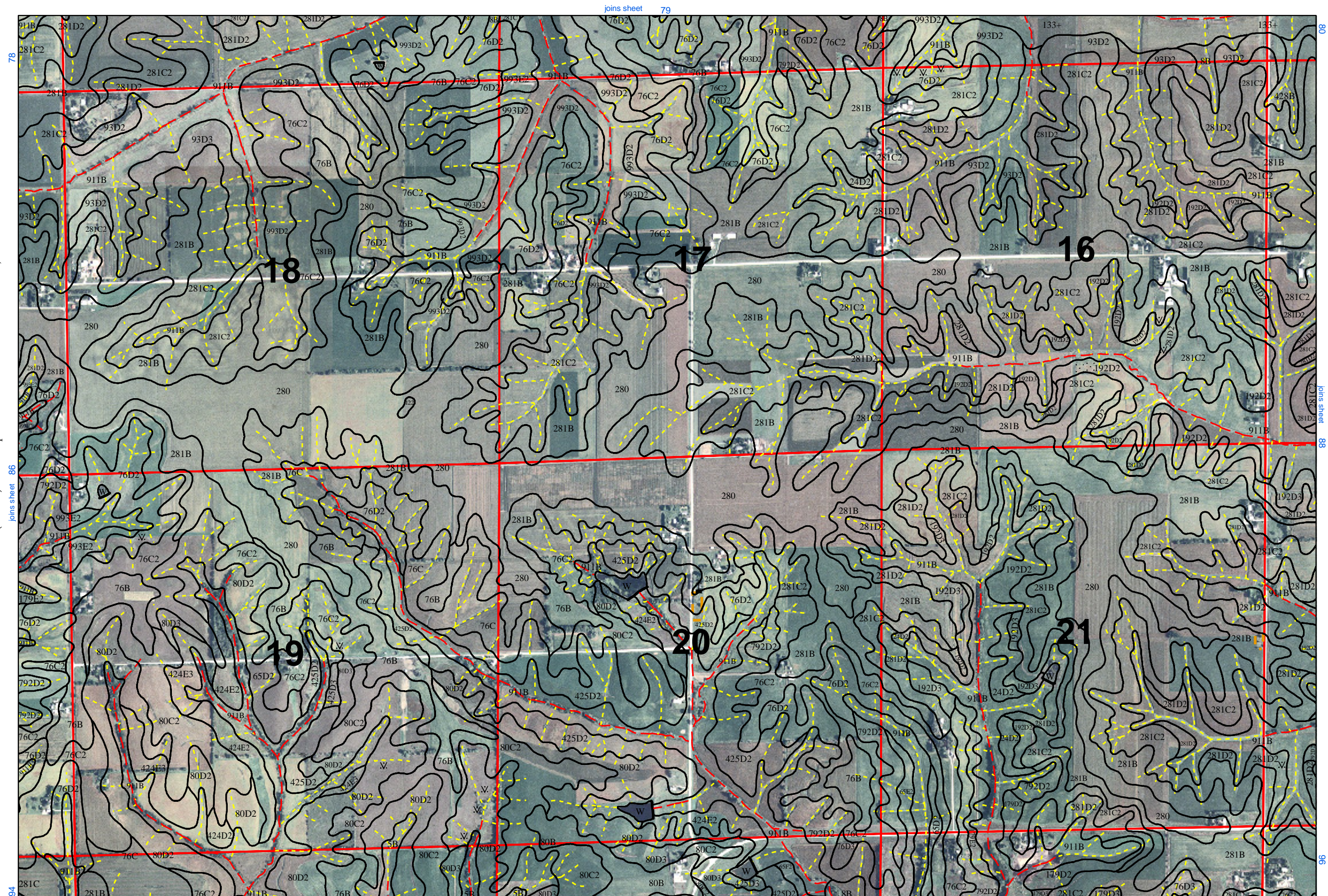


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

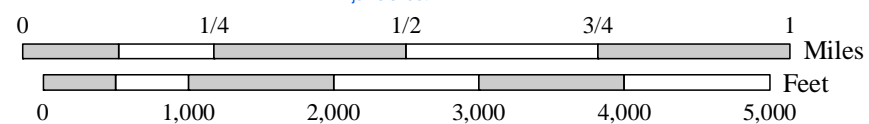


This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



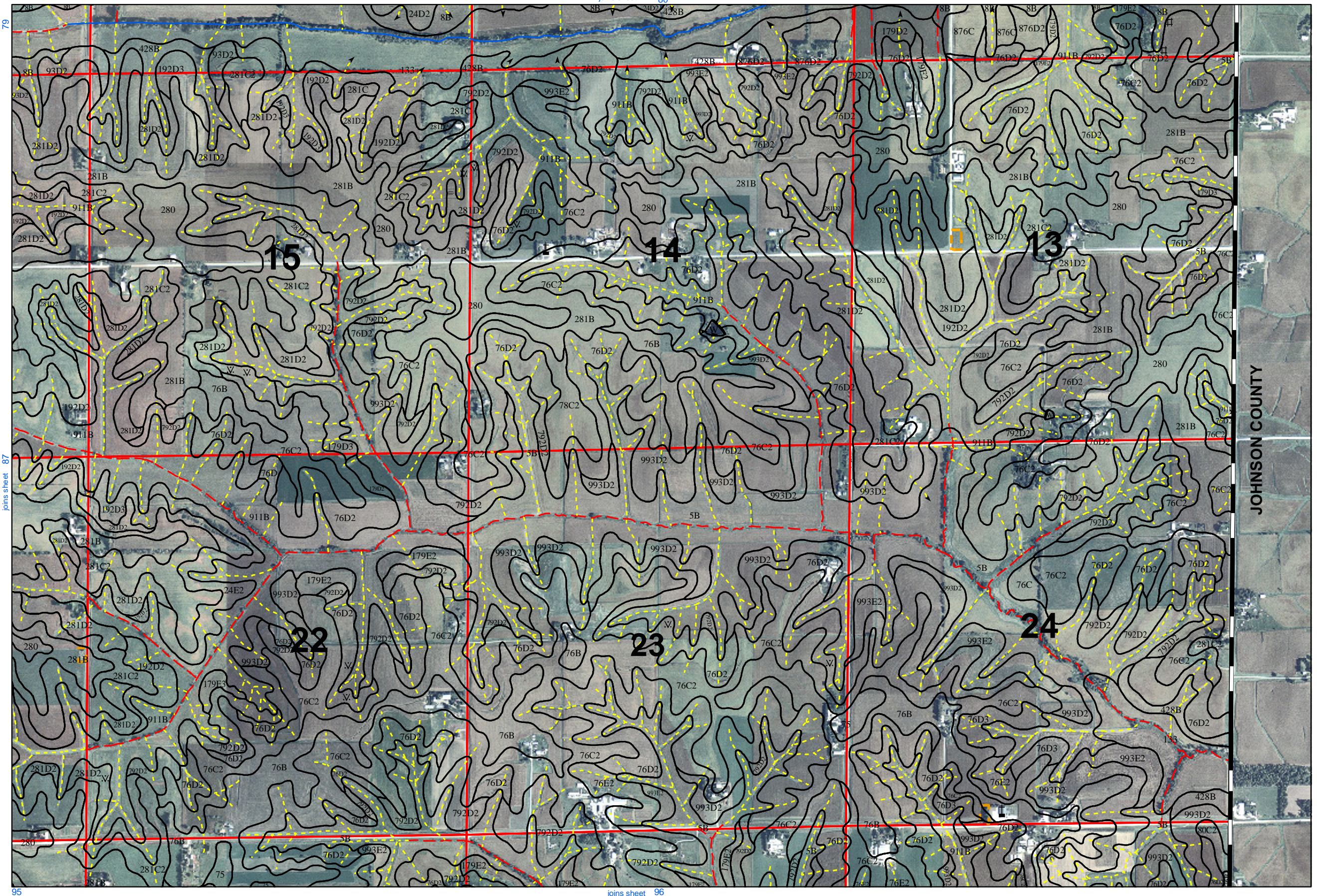
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



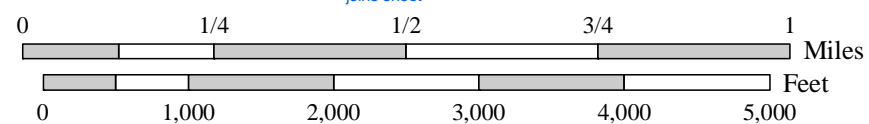
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

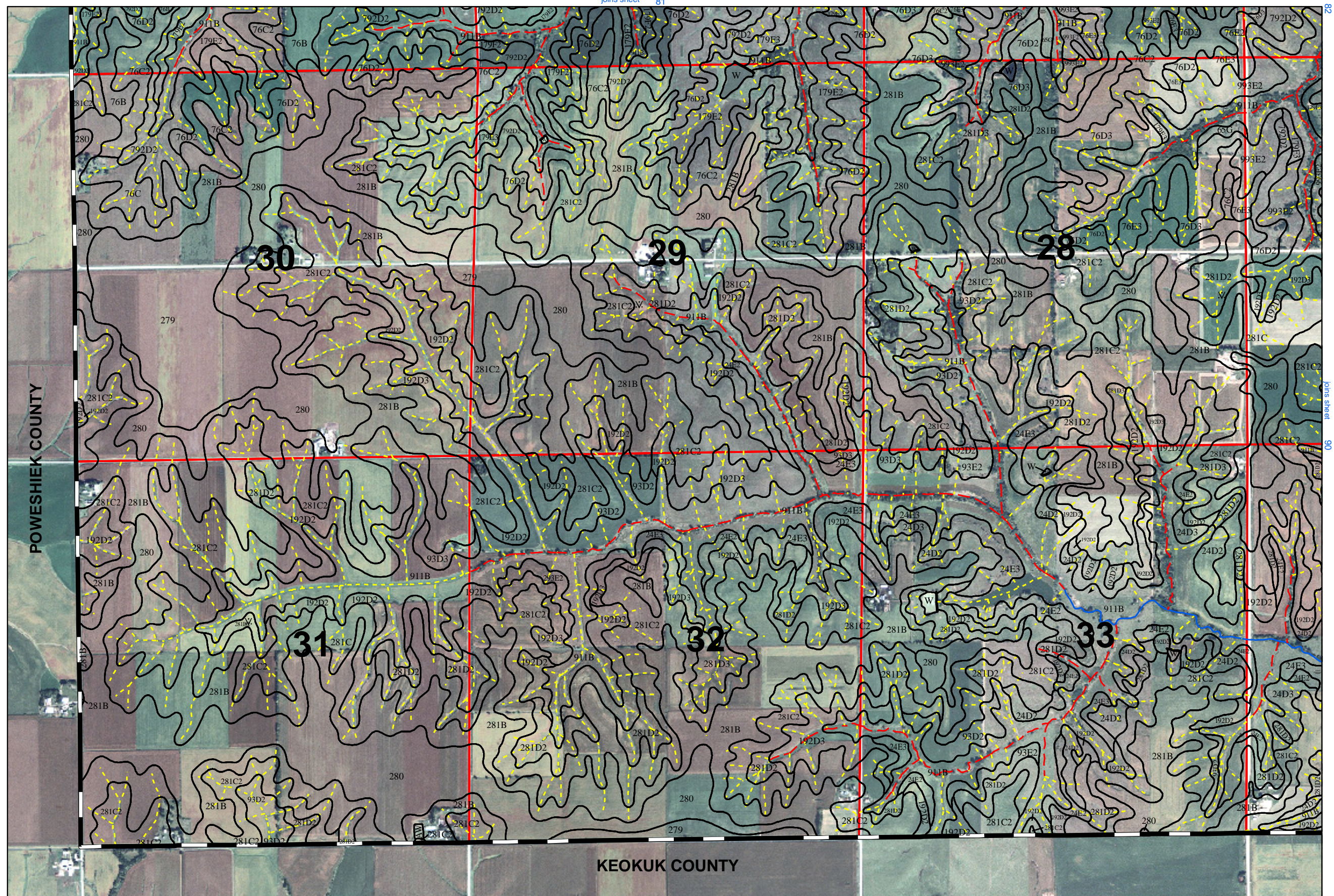
North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



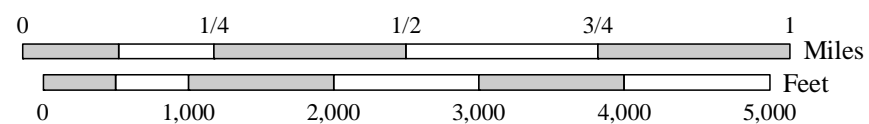
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



joins sheet 81



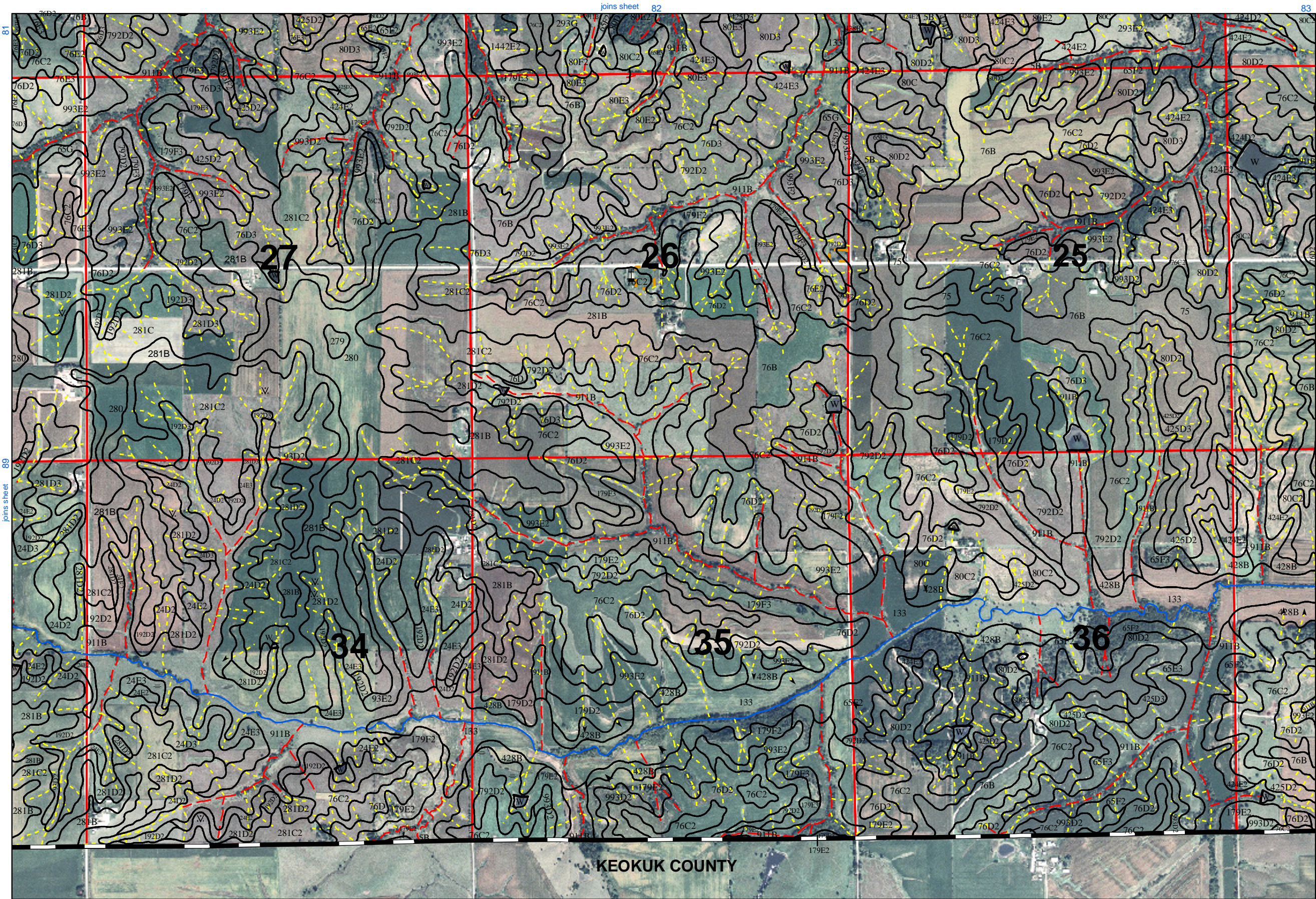
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



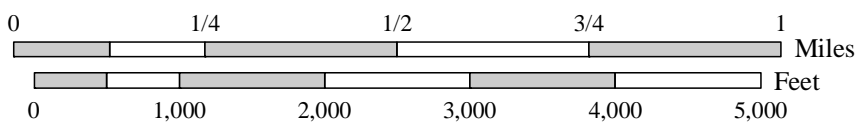
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

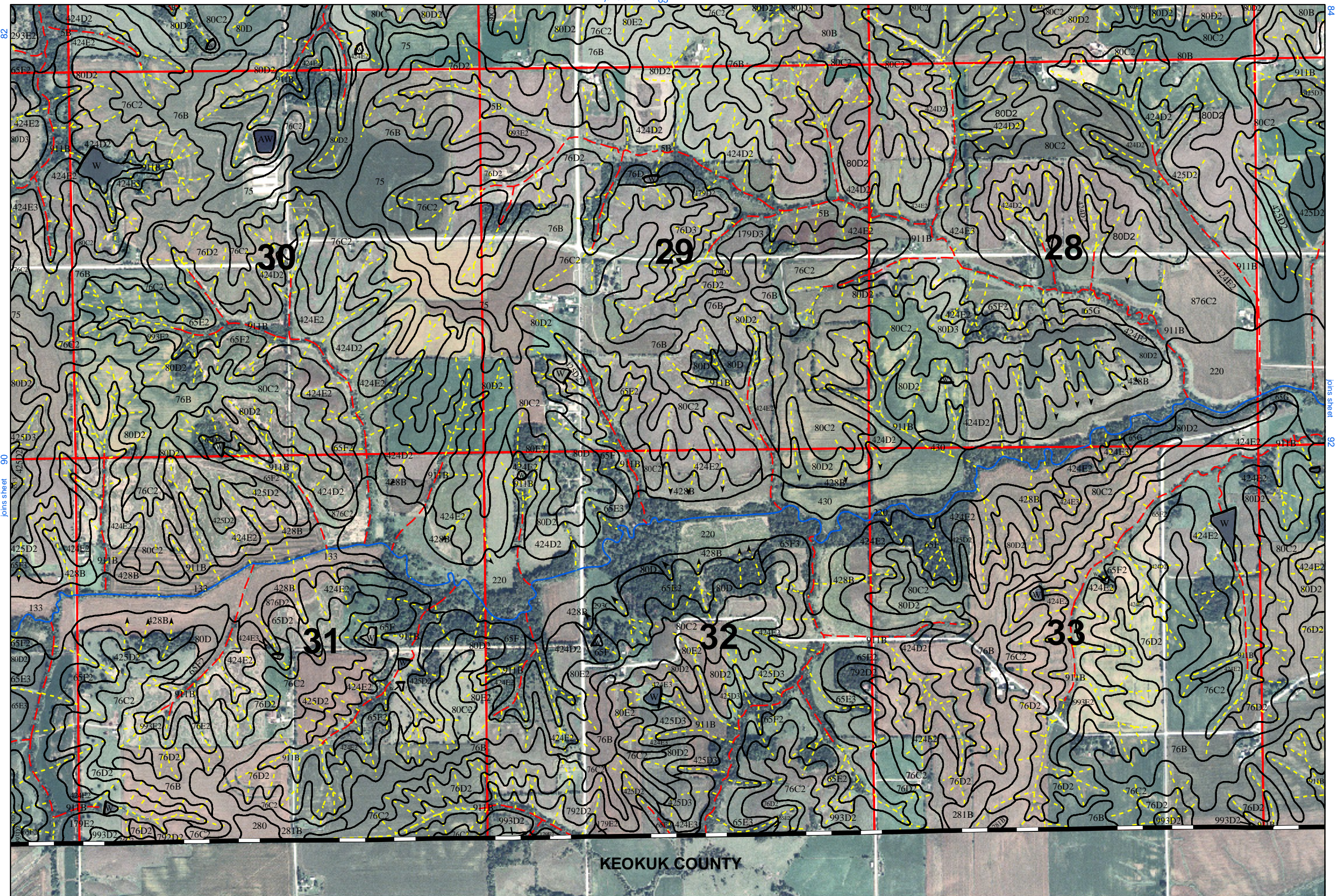


Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



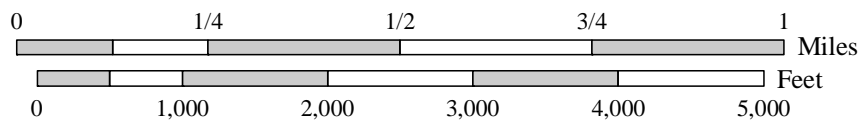
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).
 North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

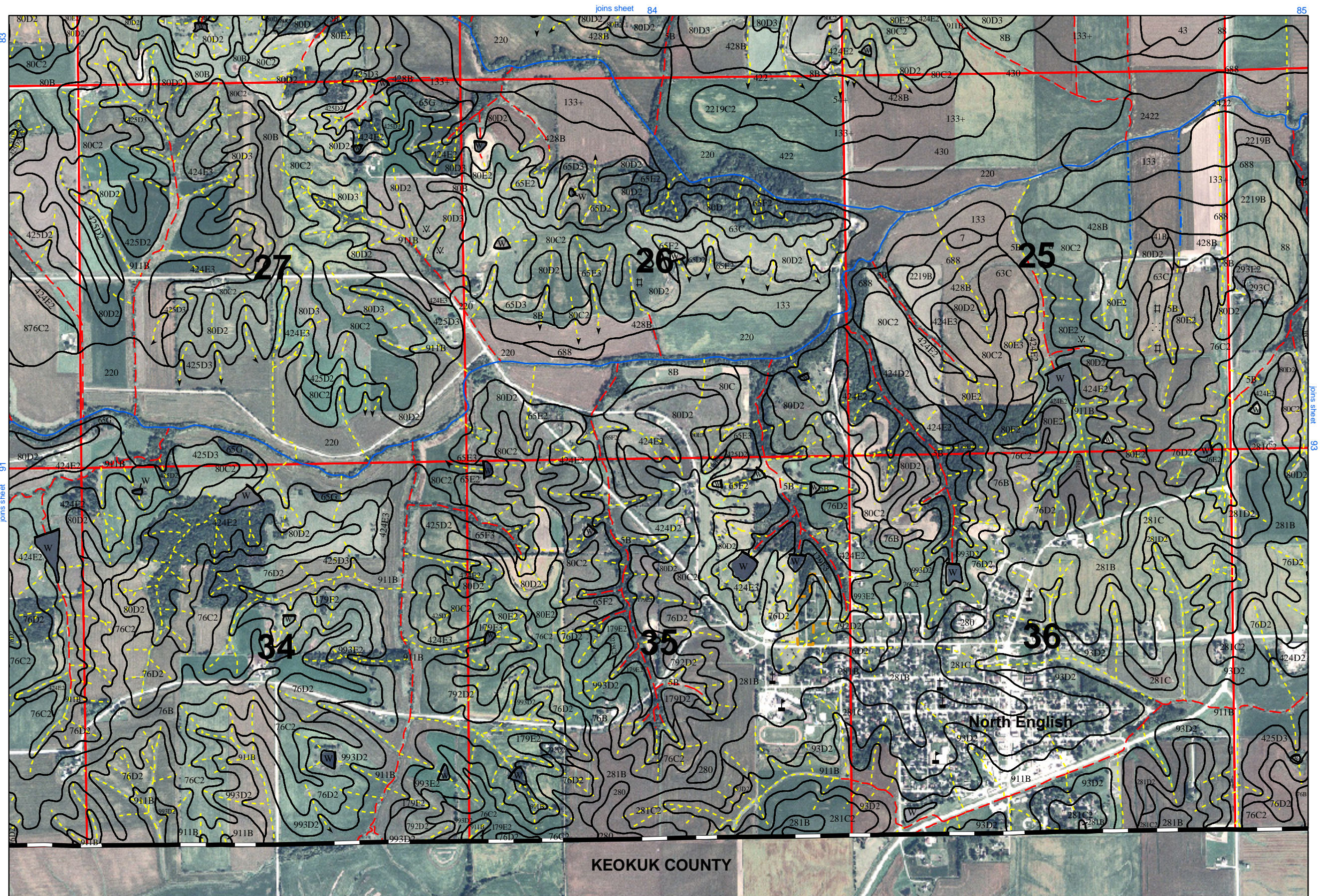


KEOKUK COUNTY

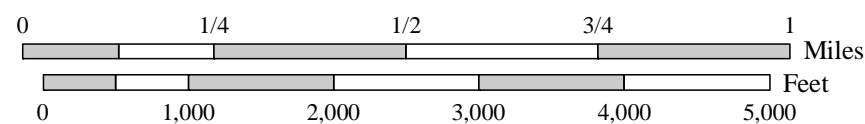
Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
 Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



(9)



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



North American Datum of 1983 (NAD83). GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



United States Department of Agriculture
 **NRCS** Natural Resources
 Conservation Service

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

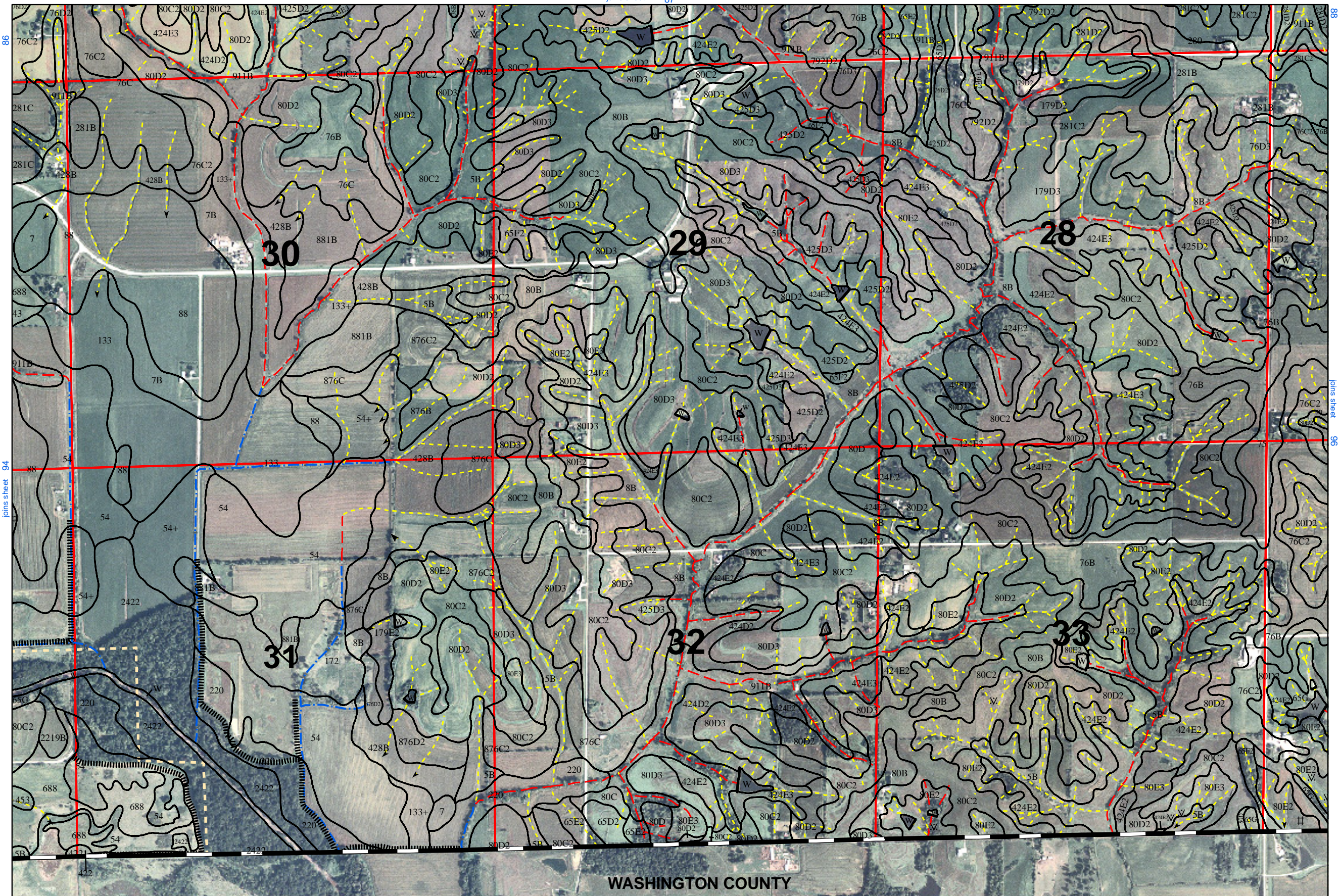
North American Datum of 1983 (NAD83), GRS-80 Spheroid. Universal Transverse Mercator, zone 15.



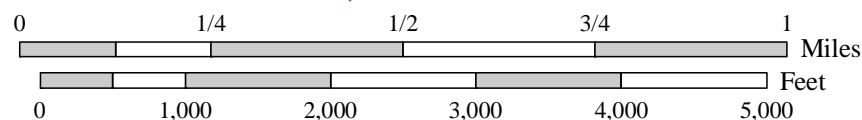
Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophotography Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.



Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.



Township 78N Range 9W

Soil Survey of Iowa County, Iowa

This map was prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service using a revised version of the November 16, 2006 Iowa County, Iowa SSURGO certified database. The soils and hydrography were compiled to spring 2002 imagery of the National Digital Orthophoto Program (NDOP) and being displayed on summer 2006 imagery of the National Agricultural Inventory Project (NAIP).

North American Datum of 1983 (NAD83), GRS-80 Spheroid, Universal Transverse Mercator, zone 15.

